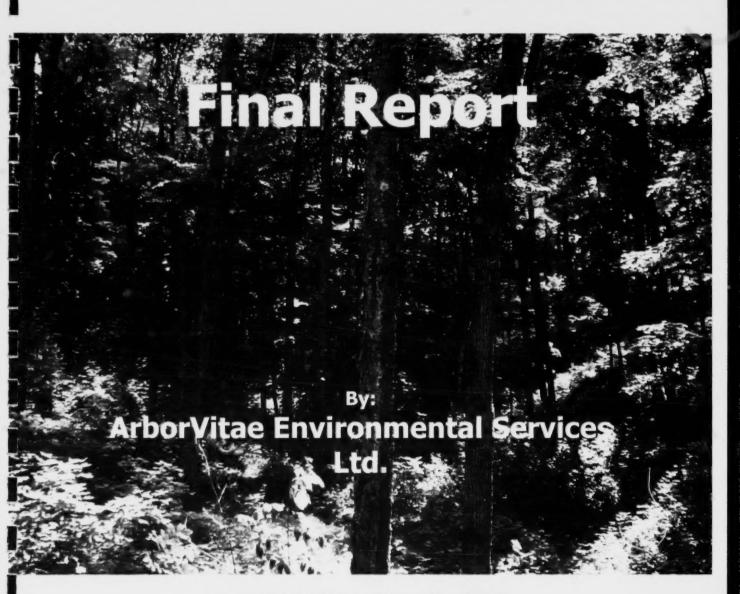
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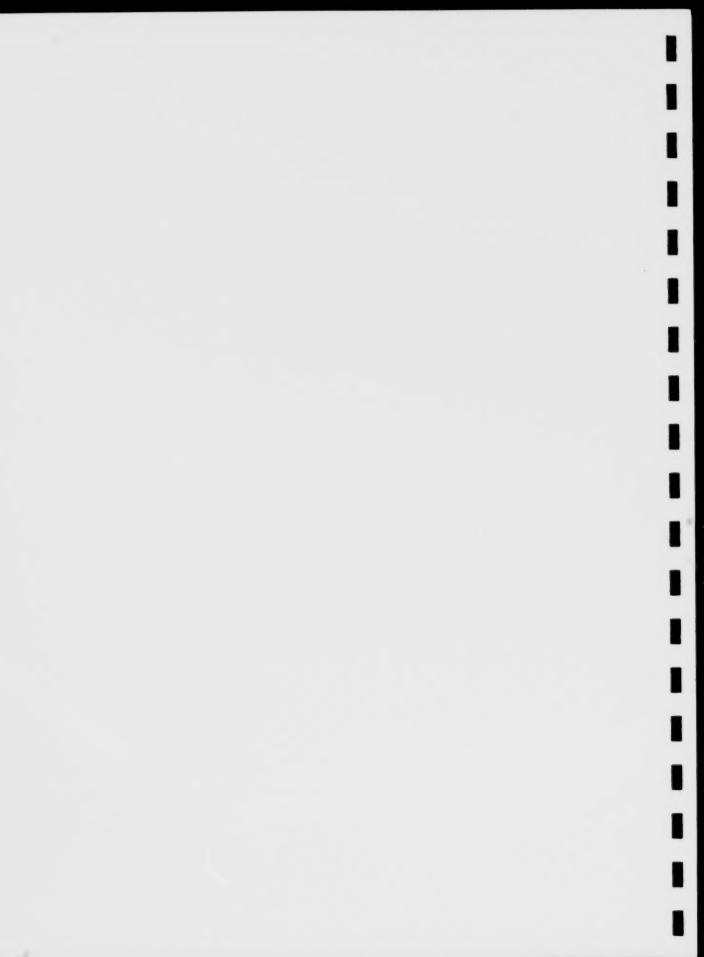
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# Bancroft Minden Forest Independent Forest Audit April 1, 2001 – March 31, 2006



**Submitted November 21, 2006** 





## **Table of Contents**

1	EXECUTIVE SUMMARY	1	ı
2	INTRODUCTION	4	4
	2.1 AUDIT PROCESS	-	5
	2.1.1 Purpose and overview of the process		
	2.1.2 Process		
	2.2 FOREST MANAGEMENT CONTEXT		
	2.2.1 Location of the Management Unit		
	2.2.2 Description of the Forest		
	2.2.3 Relevant Forest Management Issues		
3	SUMMARY OF AUDIT FINDINGS	1	9
	3.1 COMMITMENT		
	3.2 PUBLIC PARTICIPATION		
	3.2.1 Local Citizens Committee		
	3.2.2 FMP Standard Public Consultation Process		
	3.2.3 Native People's Consultation		
	3.2.4 Annual Work Schedule Public Inspection		
	3.3 FOREST MANAGEMENT PLANNING		
	3.3.1 Planning Team Activities		
	3.3.2 Resource Stewardship Agreements	. 2	9
	3.3.3 Sources of Direction	. 2	9
	3.3.4 Plan Introduction		
	3.3.5 Management Unit Description		
	3.3.6 Objectives and Strategies		
	3.3.7 Operational Planning	3	9
	3.3.8 Plan Review and Approval	4	9
	3.3.9 Plan Amendments	. 5	1
	3.3.10 Contingency Plans	. 5	3
	3.3.11 Annual Work Schedules	5	4
	3.4 PLAN IMPLEMENTATION		
	3.4.1 Areas of Concern		
	3.4.2 Harvest		
	3.4.3 Renewal		
	3.4.4 Tending and Protection		
	3.4.5 Renewal Support		
	3.4.6 Access		
	3.5 SYSTEM SUPPORT		
	3.5.1 Human Resources		
	3.5.2 Documentation and Quality Control		
	3.6 MONITORING		
	3.6.1 General Monitoring		
	3.6.2 Annual Reports	/	4
	3.6.3 Report of Past Forest Operations/ Year Ten Annual Report		
	3.7 ACHIEVEMENT OF MANAGEMENT OBJECTIVES AND FOREST SUSTAINABILITY		
	3.7.1 Achievement of Management Objectives		
	3.7.2 Review of RPFO Assessment of Sustainability		
	3.7.3 Review of Trend Analysis of Planned versus Actual Forest Operations		
	3.7.4 Conclusions Regarding Sustainability		
	3.8 CONTRACTUAL OBLIGATIONS		
	3.8.1 Payment of Crown Timber Charges		
	3.8.3 Forestry Futures Trust		
	J.O. J POTESTLY PUBLICATION	/	4



	3.8.4	Wood Supply Commitments	92
	3.8.5	Monitoring Obligations	
	3.8.6	First Nations Opportunities	
	3.8.7	Previous Independent Forest Audit	93
	3.8.8	Licence Conditions	96
	3.8.9	Licence Extension	97
4	SUMN	IARY OF CONCLUSIONS AND RECOMMENDATIONS	98
		List of Tables	
Table	e 1. Sa	ampling intensity of the Audit	8
Table	e 2 La	and Area in the Bancroft Minden Forest by ownership and type (ha)	12
Table	e 3. M	ajor Working Group Species Production Forest Area (ha) and Percentag	e of
		Production Forest Area	
		ecord of LCC Meetings and Meeting Quorum	
		ontact list for First Nations with an interest in the BMF.	
	old gro	Id growth targets compared with present, benchmark natural, and project owth on the forest (including parks and protected areas). Old growth are seed as a % of the Forest Unit on the Forest. (Sources: 2006 FMP Section 2015)	as are on
	2.3.1.	3.2, and FMP Table 36)	33
		Description of Forest Units Managed by Clearcutting	40
		omparison of planned and actual schedules for the public consultation	50
		onents of the development of the 2006 FMP	
		anned versus Actual Harvest Area (2001-06)	
		Formal training courses run by BMFC during the audit period	
		Compliance Inspection Summary from Annual Reports	
		Summary of Annual Report Submission and Review Dates	
Table	e 13. S	Summary of the RPFO's prepared for the Bancroft and Minden Crown U	nits. 75
		The Audit Team's Assessment of the Achievement of Goals and Objection	*****
Table	e 15. I	Review of the implementation of recommendations made in the 2001 Ba	93
	Indep	Review of the implementation of recommendations made in the 2001 Mineral Review of the implementation of recommendations made in the 2001 Mineral Review of the implementation of recommendations made in the 2001 Mineral Review of the implementation of recommendations made in the 2001 Mineral Review of the implementation of recommendations made in the 2001 Mineral Review of the implementation of recommendations made in the 2001 Mineral Review of the implementation of recommendations made in the 2001 Mineral Review of the implementation of recommendations made in the 2001 Mineral Review of the implementation of recommendations made in the 2001 Mineral Review of the implementation of the implementat	94
labl	e 17. S	Summary of Suggestions and Recommendations	101

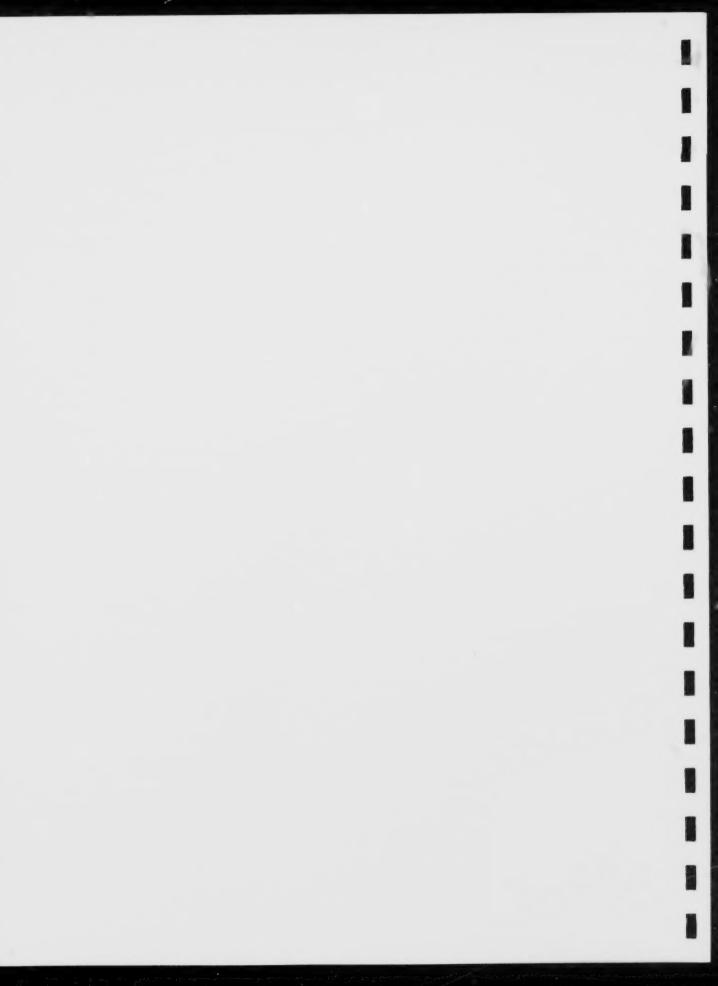
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## **List of Figures**

Figure 1. Map showing location of field sites inspected by the Audit Team Figure 2. Location of Bancroft Minden Forest Management Unit	
Figure 3. Proportional break out of BMF productive forest area by ownership and	12
Figure 4. Area by age class of even-aged forest units on Crown managed land in Bl	
rigure 4. Area by age class of even-aged forest units of crown managed fand in bi	15
Figure 5. An example of wetland damage caused by ATVs	38
Figure 6. An example of a recent clearcut in the Bancroft Minden Forest	42
Figure 7. An example of a recent clearcut with standards in the BMF	42
Figure 8. A section of a map used by BMFC in harvesting planning. The map show overlay of the forest inventory and previous harvest records. Note the many	
overlapping polygons showing records of previous harvests in several years	52
Figure 9. Fate of Area Planned for Harvest in the 2001 FMP	57
Figure 10. Actual versus Planned Harvest Area, 2001 FMP period	58
Figure 11. Prescribed burn site in Dickens Township.	62
Figure 12. Slash alignment.	62

## **List of Appendices**

Appendix A.	Forest Manager's Report
	Audit Team Members and Qualifications
Appendix C.	Independent Forest Audit Guiding Principles
	List of Acronyms
* *	Input from Parties



### 1 EXECUTIVE SUMMARY

ArborVitae Environmental Services Ltd. performed an independent forest audit of the management of the Bancroft Minden Forest for the period April 1, 2001 to March 31, 2006. The audit was undertaken using the Independent Forest Audit Process and Protocol (IFAPP), prepared by the Ontario Ministry of Natural Resources (MNR). The independent forest audit (IFA) examined compliance with the Crown Forest Sustainability Act, the terms of relevant licences, especially Sustainable Forest Licence (SFL) #542585 held by the Bancroft Minden Forest Management Company Inc. (the Company), and the management plan in place for the Forest.

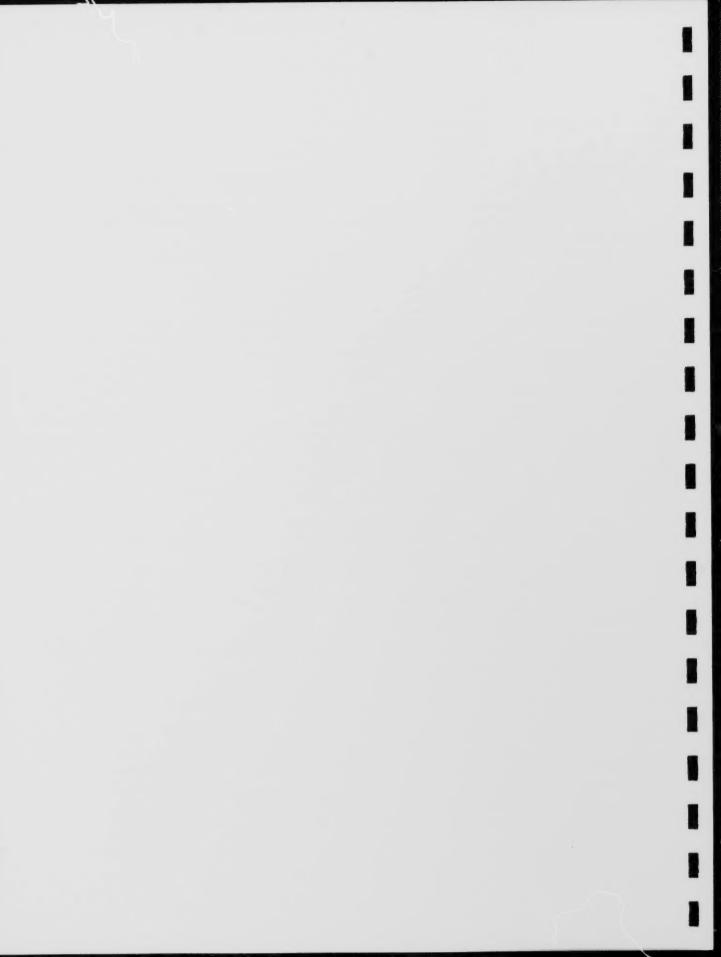
The IFA assessed the performance of both the Company and the Ministry, including the effectiveness of management practices and the sustainability of forest management. The audit period spans the entire period of the 2001-2006 Forest Management Plan (FMP), and the IFA reviews the operations during that period, the achievement of plan objectives, and the development of the 2006 FMP.

Prior to April 1, 2001, the Bancroft Minden Forest was administered as two separate Crown management units (CMUs), known as the Bancroft and the Minden CMUs. These were managed by the MNR and separate Timber Management Plans for the Bancroft and Minden Forests, written by MNR, covered the period from April 1, 1996 to March 31, 2001. Effective April 1, 2001, the two Forests were amalgamated to form the Bancroft Minden Forest. Company management of the forest commenced a couple of years prior to the amalgamation, which provided the Company with a transition period during which it led plan development and oversaw operations before becoming the prime licensee.

The Company is responsible for planning, reporting, compliance inspections, and managing operations, however it is strictly a management company and does not undertake operations. The Company was formed by a group of mid-sized sawmills, now numbering 10, a corrugated medium plant, and approximately 30 small operators, who each hold shares in the Company directly or indirectly. Company and District MNR staff have an excellent working relationship, which enables both organizations to leverage the wealth of experience of their staff.

The Bancroft Minden Forest has been commercially harvested on a continuous basis since the early nineteenth century, as new settlement, railways, and industry moved northward from the Great Lakes area and westward from the Ottawa Valley. Harvesting initially focussed on white and red pine, shifting to tolerant hardwoods, spruce, and hemlock in the early 1900's. Continuous harvesting pressure was exacerbated at times by a high demand for specific species, such as yellow birch veneer during World War II, or for hemlock during the construction of the Toronto subway in the early 1960's. An exploitation mentality persisted until the early 1980's.

At this point, the large and medium sized high quality trees had been removed from much



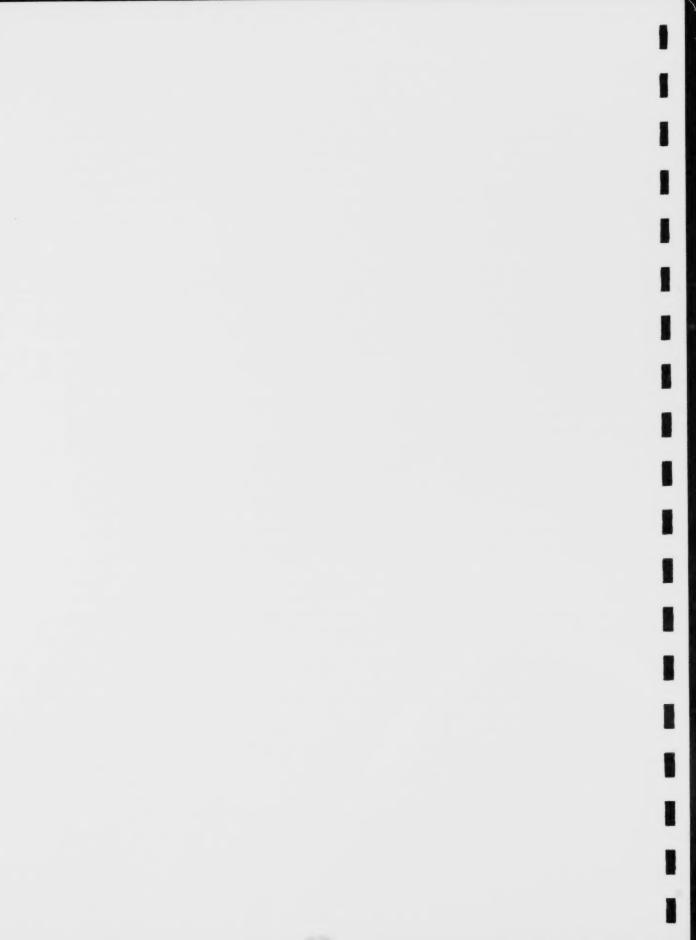
of the forest and a lack of active renewal efforts left the forest in a very poor state. In the early 1980's, forest management shifted from exploitation to an emphasis on improving forest quality, which entailed concentrated removal of the low quality material remaining in the stands, and encouraging small high quality trees to develop. Restoring forest quality is a long-term prospect, but a necessary one if the industry is to have much future and if the forests are able to return to a higher level of ecological quality. However, the implications of emphasizing the removal of lower quality stems in hardwoods create significant issues, which have been exacerbated by the terrible industry conditions being experienced throughout eastern Canada.

The forest is located two hours north of Toronto and the Golden Horseshoe. It also contains a number of towns and villages, most notably Bancroft, Minden and Haliburton, and has a sizable permanent rural population. Thus there is considerable recreational use pressure from local residents, tourists and vacation home owners. This situation creates many socio-economic currents. While many of the stand types in this forest are harvested in a way that maintains continuous forest cover, the issue of clearcutting was prominent in this audit.

The flash point for this concern, in the planning and management framework, is the LCC, which is polarized on this matter. The LCC probably fairly represents local opinion. Clearcutting, wetlands, climate change, and acid precipitation are issues that have been debated within the LCC since it was formed, in 1999, and no shared vision has emerged despite extensive efforts by District MNR (as administrator of the LCC) and the Company. A number of recommendations and suggestions are made to try to encourage the development of a shared vision, which should be pursued in order to prevent future difficulties, such as a reprise of the bump-up request made by one LCC member against the FMP. However, while the divergent opinions of the LCC members made for some difficult discussions, the LCC was fulfilling its role throughout the audit period.

The 2006 FMP met planning requirements, and was actually better than it appeared, since the authors had chosen to write parsimoniously and omitted discussion that would have shown considerable thought was put into planning. Several recommendations were made regarding content of the next FMP, due in 2011.

The audit team felt that the Company was most comfortable managing at the site level, and less comfortable in setting out landscape level direction. The 2006 FMP did not devote much attention to the pre-industrial fcrest, and has not provided old growth targets that are particularly transparent or developed using MNR direction. However, management at the site level was generally good, with each operational site receiving considerable on-ground assessment prior to harvest, and frequent formal and informal monitoring of post-harvest development. Road construction was generally acceptable, forest operations were well done, and renewal was proceeding well. The Company has also been very successful in accessing Forestry Futures Trust funding for stand improvement, tending, and a successful prescribed burn, which illustrated well the value of fire as a silvicultural tool.

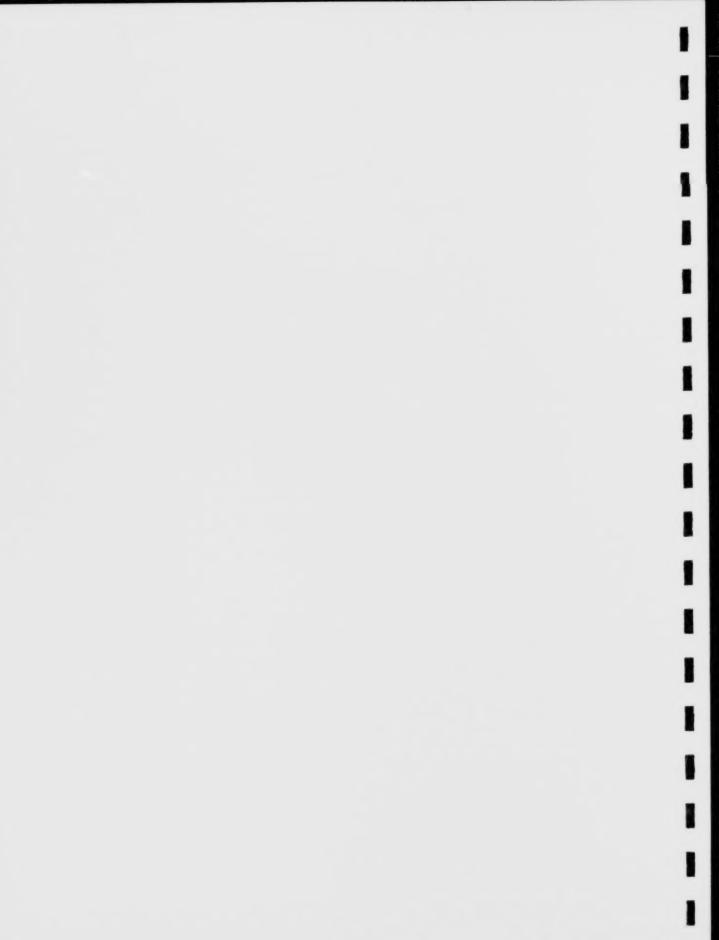


The final area where the audit team felt that the management of the forest was somewhat tenuous was in relation to the use of access by off-road vehicles, especially ATV's and to a lesser extent snowmobiles. While many users of these vehicles respect signage and road closures, a percentage of users do not and are essentially unmanageable. Off-road vehicles can lead to site damage, high fishing pressures, and may create conflicts with tourism operators. Corporate MNR must take the lead in tackling this challenging problem, and a recommendation was made at this level, as well as a suggestion at the District level.

While there are areas where improvements could be made, and challenges exist, overall, the auditors felt that the Company and MNR had managed the forest sustainably during the period of the audit. The audit team recommends that the SFL for the Bancroft Minden Forest be extended for an additional five years.

Jamy Williams

Jeremy Williams, Lead Auditor



#### 2 INTRODUCTION

This report presents the findings of the first Independent Forest Audit undertaken on the Bancroft Minden Forest, which is the result of an amalgamation of two forests, the former Bancroft Crown Management Unit (CMU) and the former Minden CMU. The Bancroft Minden Forest (BMF) is managed under a Sustainable Forest Licence (SFL) which is held by the Bancroft Minden Forest Company Inc (BMFC). The SFL, # 542585, was approved by Order-in-Council on July 18, 2001, although the SFL was established effective April 1, 2001

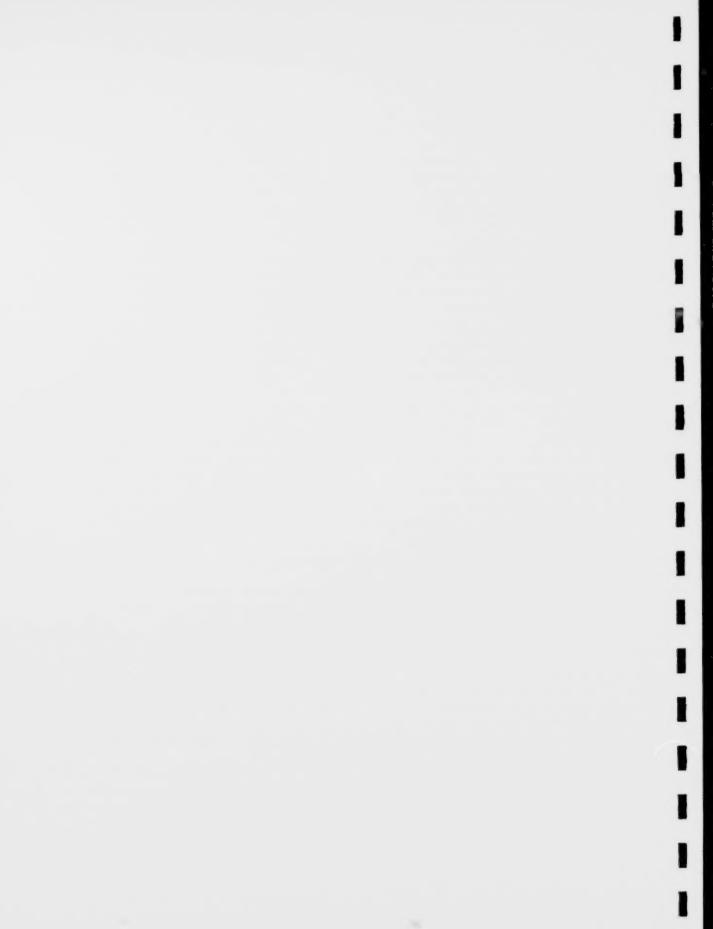
The transfer of forest planning and management responsibilities from the Ontario government to the private sector, and the amalgamation of forest management units, reflect key policy directions in the Ontario forest sector over the last decade. The Bancroft and Minden CMUs were formerly managed by the Ministry of Natural Resources (MNR) and separate Timber Management Plans for the Bancroft and Minden Forests, written by MNR, spanned April 1, 1996 to March 31, 2001. In the mid-1990's, MNR decided to merge the two forests and transfer primary management responsibility from MNR to the forest industry.

With no dominant forest company operating on the Forest, and many mid-sized and smaller ones, MNR urged the companies to form a jointly held management company. The BMFC is the resulting Company; it is owned by a large number of shareholders who traditionally harvested timber from the two former CMUs. Shareholders include one mill that manufactures corrugating medium (Norampac), the owners of 10 independent sawmills in the region, and 2 groups of loggers (Minden District Forestry Services Inc and Bancroft Forestry Company Limited). These two groups represent 17 independent loggers on the Company's Board of Directors. BMFC is headquartered in Bancroft and has a full-time permanent staff of seven, consisting of a general manager, two foresters and 4 forest technicians, who also oversee administrative and GIS responsibilities.

In April 1998, some aspects of management (renewal and maintenance and some forest management services) were transferred to the BMFC under a series of agreements, and the Company assumed full management responsibilities as of April 1, 2001.

In addition, the Bancroft District of the MNR oversees and contributes to some aspects of management of the BMF, including licensing and approvals, parts of plan preparation, review and approval, compliance assessment, and management of wildlife and other non-timber values. The main District office is in Bancroft, and there is a smaller area office in Minden which is responsible for many of the management responsibilities on the Minden part of the forest, as well as some forest-wide responsibilities. Bancroft District is within the Southern administrative Region of the MNR.

The Crown Forest Sustainability Act (CFSA) empowers the Minister of Natural Resources to manage Crown forests in Ontario and also provides the legislative basis for the Independent Forest Audits. This Independent Forest Audit (IFA) covers the period from April 1, 2001 to March 31, 2006. A Forest Management Plan (FMP) developed for



the Bancroft Minden Forest (BMF) was scheduled to come into effect on April 1, 2001, but was delayed until late December, 2001. As explained more fully in section 3.3.8, plan delays meant that only silvicultural activities were undertaken between April 1 – June 15, 2001, while during the period from June 15 to December 25, the BMF was managed under the authority of a Contingency Forest Management Plan (CFMP).

The audit assesses all of the operational activities during the audit period, including harvesting, renewal, access construction and management, values protection, monitoring, reporting and annual work schedule preparation. The audit also evaluates the achievement of the objectives of the 2001 FMP. The Forest is currently managed under a 2006 FMP, which is in effect from April 1, 2006 to March 31, 2011. This plan was developed during the audit period, and the audit assesses the plan development process to ensure that it conformed to legislative requirements and followed the intent of the CFSA and the Forest Management Planning Manual (FMPM). The audit also considers how issues that arose during the implementation of the 2001 FMP were addressed in the 2006 FMP, although this audit does not thoroughly review the 2006 plan content *per se*.

The team which conducted this audit consisted of five individuals, all experienced forest auditors, and all specialists in various aspects of forest management. Appendix B provides details of their qualifications, roles and responsibilities.

Forest management in Ontario (and elsewhere) uses a variety of technical terms. We have tried to explain terms as they are used in this document, but readers unfamiliar with the forest management planning process in Ontario are referred to the document "A Guide to Forest Management Planning" (available from the Ministry of Natural Resources) for further explanations. Appendix D lists the acronyms used in this report.

#### 2.1 AUDIT PROCESS

## 2.1.1 Purpose and overview of the process

The CFSA directs the Minister of Natural Resources to conduct a review of each tenure-holder every five years to ensure that the licensee has complied with the terms and conditions of its licence. The Independent Forest Audit fulfills this mandate, as well as complying with the direction to the Ministry laid out in Terms and Conditions #86 and 87 and Appendix 25 of the 1994 Class EA decision to "undertake operational audits, through the appointment of suitably qualified independent audit teams, which will include an assessment of compliance with the timber management planning process, approved Timber Management Plans, implementation manuals, and provincial policies, procedures, and legislation". The Declaration Order<sup>2</sup> confirmed the importance of the IFAs and imposed some additional conditions on MNR; direction regarding the conduct of the audits is also provided in Ontario Regulation 160/04 under the CFSA.

<sup>2</sup> Declaration Order regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario, approved by Order in Council 1389/03 on June 25, 2003.

<sup>&</sup>lt;sup>1</sup> Ontario Ministry of Natural Resources. 1997. A Guide to Forest Management Planning. Ontario Ministry of Natural Resources Forest Information Series. 16 p.



The scope and process of an IFA is set out in the Independent Forest Audit Process and Protocol (IFAPP), which is maintained by the MNR. The IFAPP, which is reviewed and updated annually, contains more than 300 individual audit procedures. Of these, roughly 250 apply to this IFA.

The IFAPP states that the purpose of the audits is to:

- "assess to what extent forest management planning activities comply with the Forest Management Planning Manual and the [Crown Forest Sustainability] Act;
- assess to what extent forest management planning activities comply with the Act and with the forest management plans, with the manuals approved under the Act, and the applicable guides;
- assess the effectiveness of forest management activities in meeting the forest management objectives set out in the forest management plan, as measured in relation to the criteria established for the audit;
- compare the forest management activities carried out with those that were planned;
- assess the effectiveness of any action plans implemented to remedy shortcomings revealed by a previous audit; and
- review and assess a licensee's compliance with the terms and conditions of the forest resources licence."

The results of each audit procedure are not reported separately in this report. Rather, they have provided the basis for the discussion in the following sections (primarily Section 3), where noteworthy aspects of the management of the Forest are brought forward. These discussions are followed in some instances by recommendations or suggestions which are explicitly defined in the IFAPP:

**Recommendation** - "sets out a high level directional approach to addressing a non-conformance. In most cases, recommendations follow from the observation of material non-conformances. In some instances, however, auditors may develop recommendations to address situations where they perceive a critical lack of effectiveness in forest management activities, even though no non-conformance with law or policy has been observed."

**Suggestion** - "value-added advice which reinforces adaptive resource management and contributes to continuous improvement."

Of these two types of findings, recommendations are the more serious and must be addressed in follow-up actions. Both recommendations and suggestions can be directed towards the Company and/or the Ministry of Natural Resources. Finally, if the Audit Team feels that an aspect of forest management is exceptional it may be identified as a best practice. The IFAPP provides the following definition:

Best practices – "practices so identified should be 'exceptional', not situations in which forest management is simply meeting a good forest management standard. Highly



effective novel approaches to various aspects of forest management may represent best practices. Similarly, applications of established management approaches which achieve remarkable success may represent best practices."

During this audit, the Audit Team found situations which should be corrected by the tenure holder, some which are the responsibility of the MNR District, and some which merit a joint Company-District MNR response. Issues which we believe should be addressed by the field units of MNR (i.e. Bancroft District Office) are addressed in recommendations or suggestions which simply identify "MNR" or "District MNR". Other situations which we believe need corrective action and which are related to the general framework of forest management in Ontario, are more appropriately addressed by the corporate sections of MNR. These situations involve issues that were manifested locally (hence, they surfaced in this audit), but their resolution lies in the Main Office, Forest Management Branch, or another corporate part of MNR. Recommendations or suggestions which we believe should be addressed by central branches or sections of MNR identify "Corporate MNR" as having primary responsibility.

#### 2.1.2 Process

The IFAPP describes each of the components of the audit process and contains the audit protocol, which constitutes the main framework for the audit. There are eight principles within the audit protocol (reproduced in Appendix C). Each principle contains a series of criteria, which, if met, will result in the principle being achieved. For each criterion, a number of procedures are used to assess the auditees' compliance and effectiveness. As noted above, there are approximately 250 individual procedures that were applicable to this audit of the Bancroft Minden Forest.

The audit commenced with the preparation of a detailed audit plan<sup>3</sup>, which described the procedures to be used during the audit and assigned responsibilities to members of the Audit Team. A pre-audit meeting was held between representatives of the Audit Team, BMFC, and MNR. The primary purposes of the meeting were to familiarize the auditees with the audit process, review the Audit Plan, discussing any issues raised by the Local Citizens Committee (LCC), general public or other interested party, and to select the sites to be inspected in the field during the audit.

The focus of the audit was an intensive six-day site visit, which included the following:

- review of relevant documents at the offices of the Company and the MNR in Bancroft;
- interviews with BMFC staff, commitment holders and overlapping licensees,
   MNR personnel based in Bancroft and Minden, members of the LCC; and
- field inspection of many representative sites where the forest management activities were undertaken during the term covered by the audit, examining:
  - results of harvesting and silvicultural operations in a range of forest types on different site types;

<sup>&</sup>lt;sup>3</sup> ArborVitae Environmental Services Ltd. Bancroft Minden Forest Independent Forest Audit Plan, April 18, 2006.



- results of practices intended to safeguard wildlife, aquatic, and tourism values: and
- results of road construction, maintenance, and abandonment practices.

The Audit Team visited a variety of sites throughout the Forest where activities had been undertaken during the audit period (see Figure 1). Most of the sites were selected by the Audit Team at a one-half day meeting following the pre-audit meeting. The LCC recommended roughly 5 or 6 additional sites, and of these, three were added to the filed itinerary.

Table 1 shows the total amount of each key activity and the sample size and sampling intensity for key operations. The IFAPP required the Audit Team to sample between 10 and 20% of the area treated during the audit period for harvesting, site preparation, and other key activities. The audit was within or exceeded this desired sample size for all activities.

Table 1. Sampling intensity of the Audit.

Feature	Total in Audit Period *	Total Sampled	Sample Intensity %
Harvest (ha)	12,553	2,799	22.2
Site Preparation (ha)	556	104	18.7
Natural Regeneration (ha)	4,947	1,543	31.1
Artificial Regeneration (ha)	496	288	58.1
Tending (ha) **	2,227	347	15.7
2005 FRT Areas (ha) ***	2,572	556	21.6
AOCs	Approx 400	Approx 50	12.5
Road construction (km) ****	0	n/a	n/a

\* Preliminary harvest data for 2005/06 were used to develop the total area of harvest operations for the audit period. Areas of silviculture achieved in 2005/06 were pro-rated based on the previous four years or operational area.

\*\* The figure for tending includes manual and chemical cleaning, as well as even-aged spacing. Stand improvement work is included under harvesting.

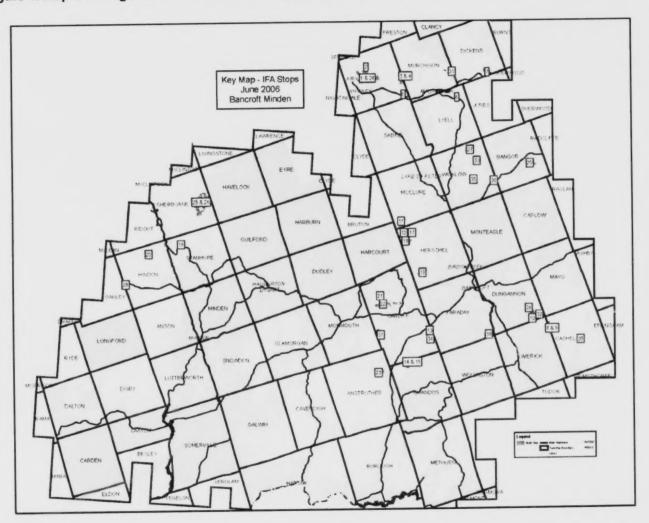
\*\*\* See text discussion for insight into basis for FRT Area figure.

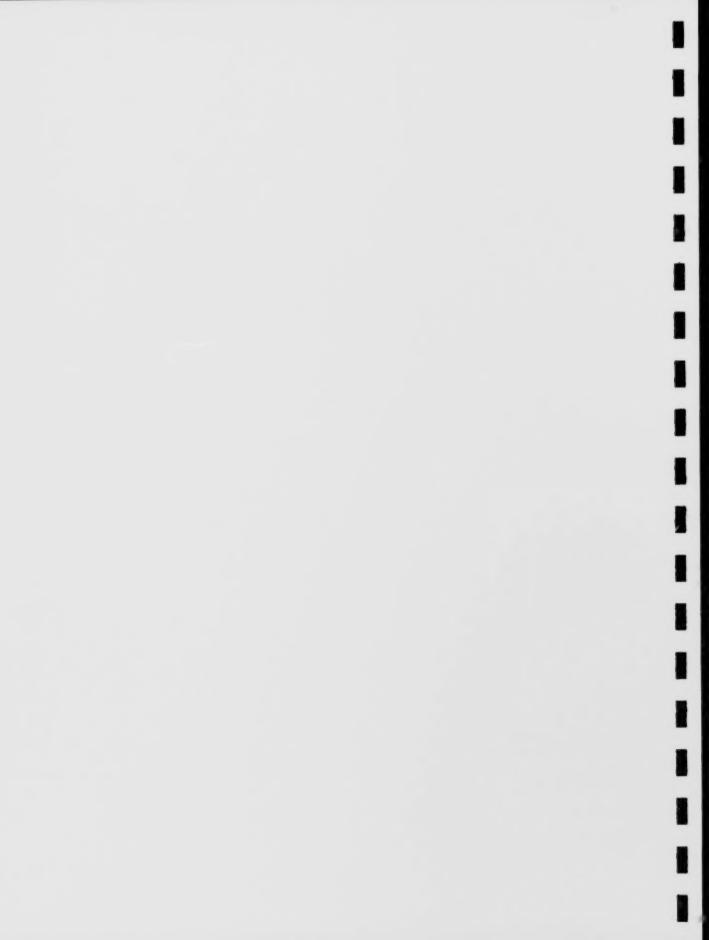
\*\*\*\* No primary or secondary road construction was planned or undertaken during the audit period. Tertiary road construction is not reported.

In Table 1, the total in the audit period refers to the areas that were harvested (salvage and normal operations), site prepared, and renewed during the audit period, and an estimate of the total number of Areas of Concern in blocks depleted in the audit period. The next column to the right shows the total area of the treatments viewed during this audit. Because the block designation methodology used by the Company leads to the formation of large and complex operational blocks, the area of the harvested stands and of silvicultural treatments within the block that we viewed is shown. The sampling intensity is calculated by dividing the area of treatments viewed by the total area (or other relevant measurement statistic) during the five-year period.



Figure 1. Map showing location of field sites inspected by the Audit Team.





The auditors are required to verify in the field at least 20% of the areas reviewed in specified procedures undertaken by KPMG. On the BMF, the review was for the 2005-06 fiscal year, for which no final achievement data were available at the time of the audit, and furthermore, the KPMG report was unavailable at the time of the site visit. Nevertheless, the auditors examined roughly 550 ha, or 21 % of the 2,572 ha harvested in the 2005-06 period, verified that operations mapping was accurate, and found that the accounting corresponded to the description in the draft specified procedures report received after field work was done.

Table 1 is intended to portray an approximate level of effort only. There are several factors which preclude too-precise an interpretation of the figures presented in the table. Although roughly 50 stops were made during the field inspection portion of the audit, more than one aspect of forest management was inspected at most stops. For example, at stops where harvesting had taken place, harvest practices, compliance issues, road construction, Area of Concern (AOC) protection, site preparation, and regeneration activities may all have been inspected. Finally, although stand and treatment areas are shown in Table 1 it should be noted that we did not inspect every hectare of the blocks we visited – such a level of effort would be infeasible.

Examples of operations were examined in each major forest unit present on the Forest, representing a range of harvesting systems, harvest operators, and silvicultural treatment packages. These included sites that had been harvested in the audit period using clearcut, selection and shelterwood harvest systems. A number of sites where renewal activities had been conducted during the audit period were visited to evaluate the appropriateness and quality of these treatments and to perform an initial evaluation of their effectiveness. These included sites that were scarified, planted, and those for which natural regeneration was planned.

#### 2.2 FOREST MANAGEMENT CONTEXT

# 2.2.1 Location of the Management Unit

The Bancroft Minden Forest is located south of the western two-thirds of Algonquin Park. It extends as far south as Burleigh Falls (approximately 40 km north of Peterborough), as far west as Lake Simcoe, and as far east as Bark Lake and Combermere. The major communities located in the forest are Bancroft, Haliburton, Minden and Whitney. Figure 2 shows the BMF, as well as its regional context.

There are also nine interested First Nations, of which none have reserves within or adjacent to the Forest. The interested First Nations are Algonquins of Pikwakaganan, Algonquins of Bancroft /Baptiste Lake, Algonquins of Whitney, Curve Lake First Nation, Kawartha Nishnawbe First Nation, Mississaugas of Scugog Island, Alderville First Nation, Hiawatha First Nation, and Chippewas of Mnjikaning (Rama).



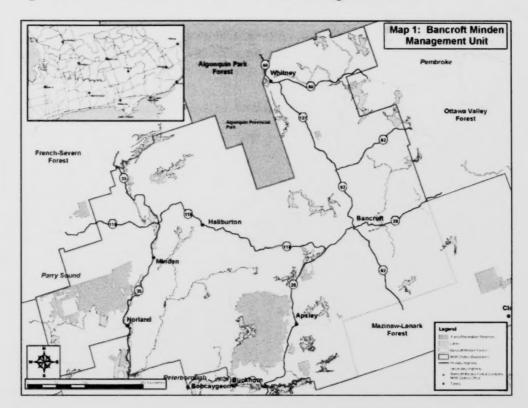


Figure 2. Location of Bancroft Minden Forest Management Unit.

The western boundary of the forest is synonymous with the eastern boundary of the French Severn Forest, while the Ottawa Valley Forest and Mazinaw-Lanark Forest management units are located to the east and south-east of the BMF, respectively.

## 2.2.2 Description of the Forest

This section of the report, and the following section on forest management issues, are primarily based on information contained in the 2006 FMP.

One of the key characteristics of this forest is that it is largely privately owned. Neither the MNR nor BMFC manage any of the private land within the management unit, and this audit does not consider activities that take place on private land. In Figure 1, the grey shaded area is private land, and one can see that the majority of the southern part of the forest management unit, as well as much of the central section, is under private ownership. The major concentrations of Crown land are in the western and north east parts of the forest, and this is where the majority of audit site inspections were directed.



Table 2 shows the extent of various components of the landbase by ownership class. The area of land in the Park and unmanaged category includes provincial parks and areas that have a legal status that precludes them from being available for timber harvesting, such as conservation reserves. The area of the BMF is 991,867 ha, which includes almost 100,000 ha of water. Roughly 70,000 ha is non-forested, leaving approximately 830,000 ha of forest area. Of this, 90,189 ha is not sufficiently productive to grow merchantable trees, leaving a total of 73% of the landbase that is considered productive.

Table 2. Land Area in the Bancroft Minden Forest by ownership and type (ha)

Landbase Component	TOTAL	Private	Crown Park & Unmanaged	Crown Managed
Water	99,434	23,909	9,829	65,697
Non-forest	70,698	66,471	339	3,886
Non-productive Forest	90,189	39,567	21,159	29,462
Productive Forest	731,546	418,238	45,418	267,890
TOTAL	991,867	548,185	76,745	366,935

(Source: FMP-1, 2006 FMP)

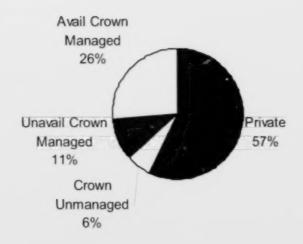


Figure 3. Proportional break out of BMF productive forest area by ownership and management status.

Of the total productive forest area in the BMF (which is 82% of the BMF landbase), 57% is privately owned, 27% is Crown managed land, and 6% is in provincial parks or unmanaged. Key Provincial Parks in the BMF include the Kawartha Highlands Signature



Site, Silent Lake, and the Queen Elizabeth II Wildlands. Figure 3 shows the proportion of productive forest area by ownership and type of management.

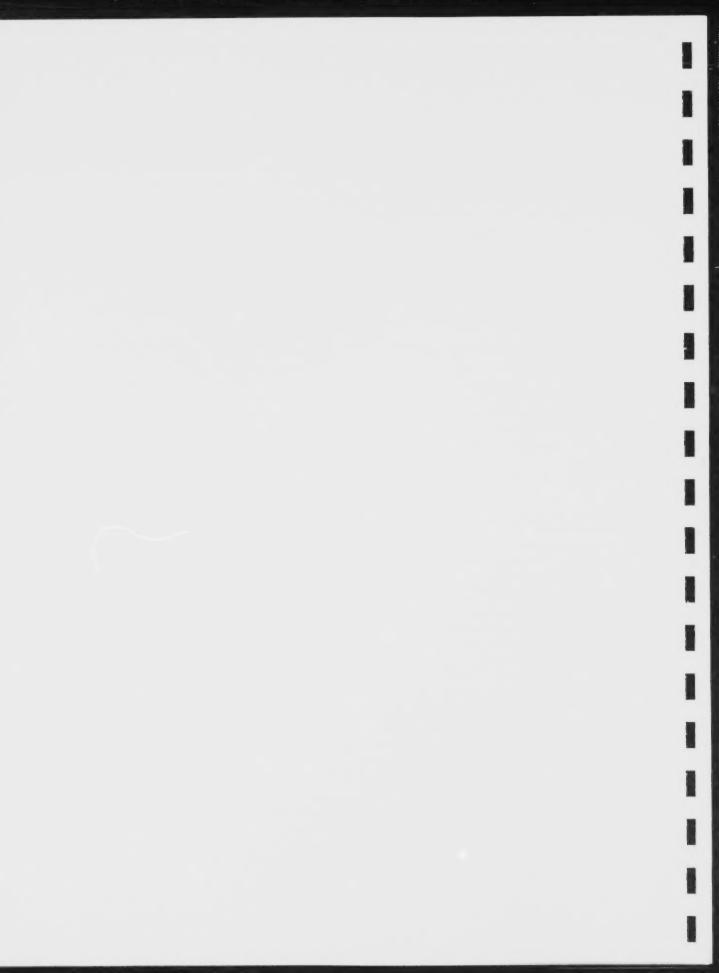
Table 2 also indicates that the area of the Crown managed productive forest is 267,890 ha, and of this, 9,839 ha is protection forest and 66,942 ha is considerable unavailable for harvesting. Therefore, only 191,109 ha is considered to be available (2006 FMP). Figure 3 shows the break out of the productive forest area by ownership and management status; of the nearly 1 million ha in the BMF, less than 20% is available for timber management under the auspices of the BMF and the FMPs prepared for the Forest. Within the Forest, a considerable amount of private land is available for harvest, and much has been harvested, often repeatedly, over the years. However, the timber harvesting and management activities on private land are not subject to the terms of the CFSA, the SFL, or the FMP, and are outside the scope of this audit.

The BMF is considered to be part of the Great Lakes-St. Lawrence Forest type, which is typified by deciduous species such as sugar maple, beech, and yellow birch on the richer, wetter sites and red oak on the drier sites, and by coniferous species such as eastern hemlock, eastern white pine, and red pine. The forest also contains abundant poplar and aspen stands (trembling aspen, large-toothed aspen, and balsam poplar) and white birch. There are numerous other species present in the forest, some of which are most often incidental species in the Great Lakes –St. Lawrence forest – basswood, white ash, and black cherry – and some of which are more frequently considered to be part of the boreal forest – jack pine and black spruce.

Logging has taken place in the BMF for more than 150 years, with white pine being the initial focus of logging in the 19-th century. Since then, most species have been desirable at various times, especially when present as large, high-quality trees. Waves of logging have concentrated on species such as hemlock (for tannin in the 1920's and again for subway pit props in the 1960's) and yellow birch (for aircraft skins in the Second World War), so that many parts of the forest have been logged 4 – 6 times. As a result, some aspects of the forest have been heavily modified from the conditions which prevailed prior to the arrival of European settlers. We also note that some of the shareholder companies are family-owned businesses that have been in existence for as many as six generations.

The BMF is difficult to characterize in a single chart or table. Table 3 shows the major working group species, which are those tree species that comprise 5% or more of the total production forest area. The data are shown for the entire forest and also for the Crown managed portion only. Note that almost 75,000 ha of the Crown managed area is not available for timber harvesting because it is protection forest or for other reasons. On both landbases, hard maple and poplar are by far the predominant species.

On the entire forest landbase, the area of the hemlock, balsam fir, and white birch working groups was between 2 and 4% of production forest area, while ash, yellow birch, jack pine, red pine, black spruce, white spruce and larch are less than 2% (and in most cases less than 0.5%) of the production forest area. These area figures provide some



indication of the relative variety and abundance of commercial tree species in the forest. However, many of the species, especially the mid-tolerants – yellow birch, ash, white spruce – rarely grow in sufficient concentrations to be the lead species in a stand and thus be identified as the working group. However, these species are nonetheless widely present throughout the forest. (Species such as basswood and black cherry are not even listed in the working group areas, so rarely do they constitute the leading species in stands in the BMF.)

Table 3. Major Working Group Species Production Forest Area (ha) and Percentage of Total Production Forest Area.

	All Ownerships		Crown Managed	
Working Group	Area (ha)	Percentage	Area (ha)	Percentage
Cedar	55247	7.76%	7762	3.01%
Maple, hard	304193	42.74%	100472	38.93%
Maple, soft	35855	5.04%	13618	5.28%
Oak	45337	6.37%	17528	6.79%
Poplar	124541	17.50%	57117	22.13%
White Pine	35071	4.93%	23073	8.94%
TOTAL	600244	84.34%	219570	85.08%

(Source: FMP-2; 2006 FMP)

It is also of interest that most of the red pine (3,682 ha) and all of the Scots pine (1.4 ha) forest unit is plantations less than 40 years of age. These forest units are minor in terms of area and not shown in Table 3.

The Crown managed portion of the forest is similar to the entire forest, although there are several differences of note. As Table 3 shows, white pine stands are almost twice as frequent in the Crown managed portion of the forest as on the forest as a whole. This reflects in part the recent efforts of forest management on the Crown forest to increase the abundance of white pine through renewal and the use of the uniform shelterwood system. The managed Crown portion also contains a higher proportion of poplar (and birch) than does the unit as a whole, while hard maple and cedar make up a lower fraction of the Crown managed land base. Among minor species, white spruce and balsam fir are less predominant on the Crown managed forest than on the entire BMF.

On the Crown managed forest, half of the forest area is managed as an all-aged forest — these working groups include ash, yellow birch, cedar, hemlock, hard and soft maple, and other hardwood. Thus, it is less meaningful on this forest to consider the age class structure as an indication of the forest quality. Nevertheless, Figure 4 shows the area by age class of the working groups managed on an even-aged basis (key working groups include oak, poplar, white birch, and white pine). The Figure shows that almost 75% of the even-aged forest area is between 61 and 100 years of age. Only 1.54% is older than 120 years of age.



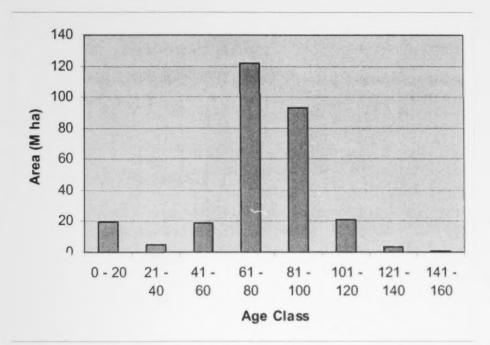
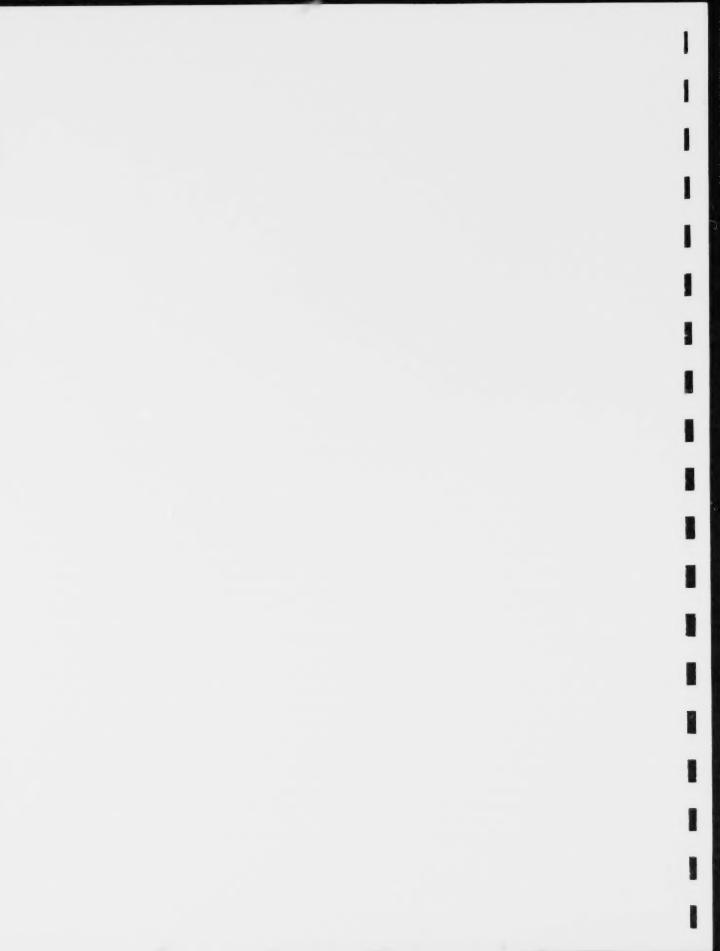


Figure 4. Area by age class of even-aged forest units on Crown managed land in BMF.

There several other key aspects of the forest that deserve mention in order to set the context for this audit. Perhaps the major factor is the very high level of recreational use and tourism in the forest. The Bancroft Minden area is a very popular cottaging area, and most lakes of any size are ringed with cottages, which are increasing being converted into homes that can be used year round. There are also numerous lodges and camps in the region. Hunting and fishing are popular pursuits, with deer being the most important game species, followed by moose.

The forest area is also well populated with year round residents, who reside in communities or in more rural settings. There are some key differences between the perspectives of the year round and seasonal residents, most notably their attitudes towards logging and wildlife. There are also substantial income differences as well. As will become clearer in several sections of this report, there is also a strong contingent of year round residents who favour greater restrictions on harvesting. These divergent viewpoints create some tension from time to time, and both the Company and MNR are cognizant of the need for consultation and discussion with all stakeholders.

Finally, the forest is well accessed by a variety of provincial, municipal and private roads, as well as many snowmobile, hiking, and all-terrain vehicle (ATV) trails. There are numerous road maintenance arrangements, and the quality of roads is variable. There are also large numbers of off-road enthusiasts, and access management is problematic in that



it is almost impossible to prevent ATV users from using decommissioned roads if they are determined to do so.

## 2.2.3 Relevant Forest Management Issues

Several issues are identified below as being long-running, pervasive challenges to forest management on this Forest. In some cases, these issues surfaced in the previous IFAs on the predecessor CMUs, while in other cases they reached greater prominence during the review period than they had previously.

## Forest Complexity / Old Inventory

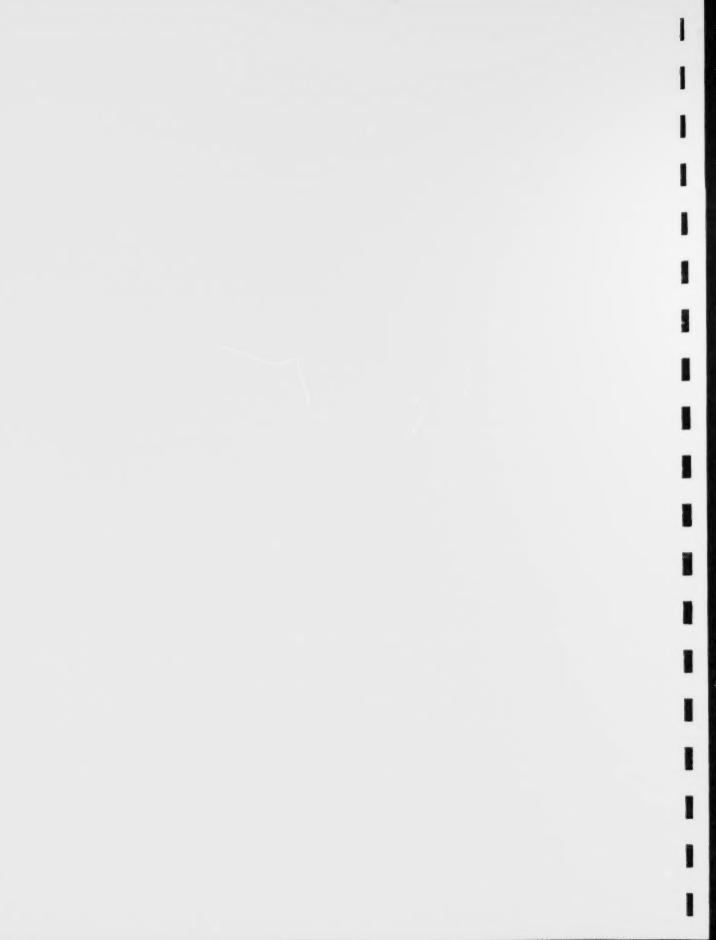
The Forest Resource Inventory (FRI) used to prepare the 2001 and 2006 FMPs was based on photography undertaken in 1987. The FRI has been updated since 1987 (after 1998 this became the responsibility of the BMFC) but photography on which the updates are based is quite outdated. Moreover, many of the earlier partial harvests undertaken during the period of MNR management have not been captured in the updates, in part because the FRI was not designed to capture well partial harvesting.

One of the implications of this is that the Company needs to inspect as many of the sites that are allocated for harvest in the FMP as possible to ensure that there is in fact sufficient timber to make harvesting appropriate and worthwhile. During the development of the 2001 FMP, the Company was not able to get to many allocated sites, with the result that a substantial amount of the area allocated for harvest during the 2001 period was not feasible to harvest and was by-passed as a result. The Company did better in this regard during the preparation of the 2006 FMP, and so it expects that there will be less by-pass during the current plan period.

The Audit Team was informed that the BMF is scheduled to have aerial photography flown in the summer of 2007 in order for a new inventory to be developed. The Audit Team hopes that the recent return of primary inventory functions from the industry to MNR will proceed smoothly so that the Company will have the new inventory in good time for assistance with the preparation of the 2011 FMP.

## Abundance of low-quality hardwoods / Low utilization levels

Due to the past harvest history alluded to above, a large area of high-graded tolerant hardwood stands has been created. These stands may have relatively high or low volumes, but the overall timber quality level is poor. The present marking prescriptions call for the removal of low quality stems, and leaving higher quality stems, especially of younger material, for future harvests. This approach to upgrading stand condition has a present day cost, which is that harvests in these types of stands are usually only economically viable when the stand has a relatively high volume. The Company must pay operators to remove the low quality material in low volume, low quality stands, otherwise they will not be harvested. This has led to a very low proportion of the planned area actually being harvested in these stands – during the period of the 2001 FMP, approximately 20% of the planned harvest area was taken in the HD2, HD4 and CM1



forest units (tolerant hardwood stand types). Since the planned harvest area in these forest units was almost 8,000 ha, or one-third of the total planned harvest area, this had a significant impact on overall harvest results.

While the root causes of this situation are beyond the scope of the Company or MNR to resolve quickly (i.e. poor industrial conditions of high input costs and relatively low product prices), it is nevertheless identified as an issue of importance which will be further discussed below (See Section 3.4.2).

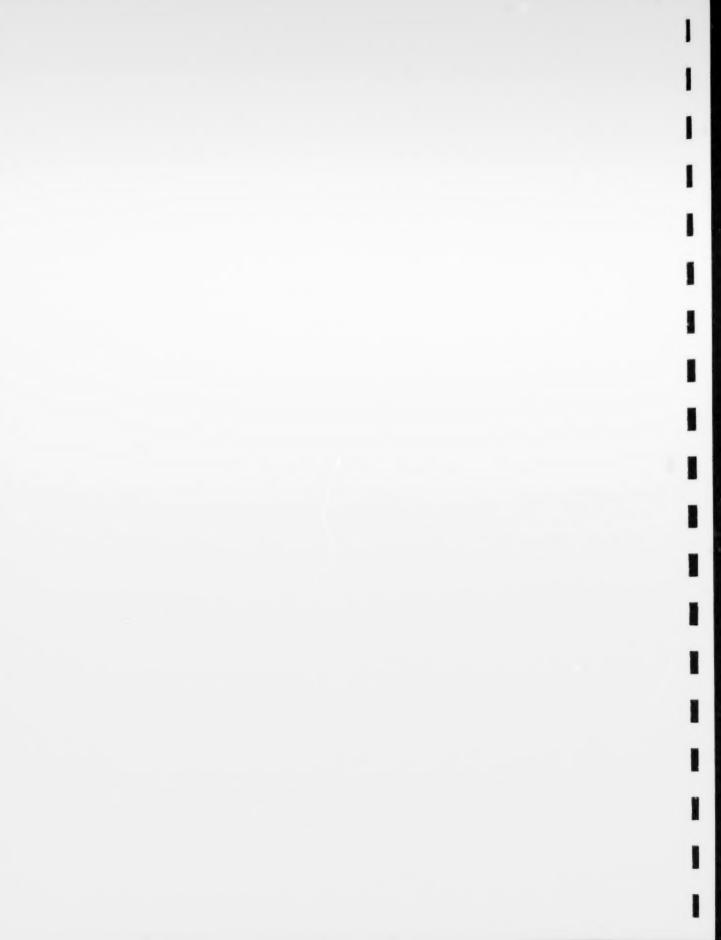
## Pre-settlement Forest Condition and Landscape Level Direction

As indicated above, the forest is very complex at both the site and landscape level, with site conditions, past history and other factors affecting the forest composition and structure. The Company is very comfortable managing at the stand and block level, however the Audit Team was of the opinion that the Company was reluctant to proactively incorporate landscape level concepts into its management. This is not to say that there were no landscape level considerations in the plan – habitat supply, second-order watershed, disturbance size distribution were considered at the landscape level. However, the Company's handling of old growth in the FMPs reflected a stand-level orientation as opposed to a landscape level approach. The sections in the 2001 and 2006 FMPs describing the historic forest were almost identical and rather cursory. The 1996 FMPM states that the description of the historical forest condition will assist with the identification of the desired future forest and the 2004 FMP provides more extensive and specific direction on what aspects of the pre-industrial forest should be described. The Company was also experiencing challenges applying the Natural Disturbance Pattern Emulation Guidelines (NDPEG), in part because NDPEG was written with a boreal forest perspective, and because a substantial proportion of the local LCC and public opinion did not support increased clearcut levels. Both the NDPEG and the pre-industrial forest condition provide guidance for forest managers to shift the forest back to a more "natural" condition, which is considered to support biodiversity conservation. These considerations will appear throughout this report.

# No Shared LCC Vision for Forest Management

Finally, it became evident to the Audit Team that the LCC is polarized. Of the 11-12 members who are regular attendees, roughly three have strong reservations about forest management direction and sustainability while another 3-5 feel that the forest is being managed appropriately. The remaining 3-5 members hold more intermediate views, which may perhaps be described as a lack of comfort with some aspects of management balanced with a sympathy for other dimensions to the debate.

This polarization has manifested itself in a long-running disagreement over how the forest should be managed, extending back virtually to its establishment in 1999. While MNR and the Company are following guidelines and requirements as they manage the forest, a key portion of LCC has strong to moderate concerns in three respects: the extent of clearcutting in the forest and the impacts of acid precipitation and climate change.



These issues were discussed extensively by the LCC during the audit period but the inability to resolve them led one LCC member to initiate a bump-up request on the 2006 FMP, citing as the rationale these three factors and industry-self compliance.

Clearcutting has perhaps been the longest-running topic of debate. The Audit Team is concerned that after at least 6 or 7 years of discussion on this issue, there has been no success in finding common ground. Some LCC members expressed frustration at the situation, for on this and other contentious issues, they are so dissatisfied with a lack of progress and resolution that it is causing them to question their commitment to the LCC. Equally, the Company and MNR are frustrated by an inability to reach a consensus with all members of the LCC.



## 3 SUMMARY OF AUDIT FINDINGS

## 3.1 COMMITMENT

The Company and the MNR staff displayed a high level of commitment to sustainable forest management, and operate at a very high standard. There is no doubt in the minds of the auditors that staff of both organizations are strongly committed.

However, the Company does not meet a number of the procedures in the IFAPP commitment section, because it does not have a vision or policy statement. The Company deliberately maintains a low profile, does not have a web site, and prefers to focus on the required aspects of forest management, such as conducting its operations well, and preparing good plans and other relevant documents. The Company's overall approach might be best characterized as "cautious".

The Company is involved in a variety of organizations and provincial governmentindustry initiatives. The Company cited these examples of its regional and provincial involvement:

- · an active Ontario Forest Industry Association member;
- a member of the Provincial Wood Supply Strategy Implementation Team;
- the industry representative on the Stand and Site Guide review team;
- a member of the Board of Directors and Awards Committee for Ontario Forestry Safe Workplace Association;
- the SFL representative on the Board of Directors of the Forest Gene Conservation Association;
- consistently provides constructive input to manuals, guides, and guidelines (e.g., silviculture guides, wood turtle and ginseng guides, FIM, the new FMPM, site damage standards);
- an active participant in developing approaches to NDPEG implementation issues in the GLSL forest;
- a co-chair of the Regional Compliance Committee and actively support inspector training;
- provides support via in-kind, cash, or information provision for research projects including Goshawk guidelines, watershed studies (Scalable Indices of Disturbance project of CFS), selection management and songbirds, cone and seed pest management in white pine seed orchards; and
- participates in local economic development committees.

However, in the view of the Audit Team, the Company's stance on certification encapsulates its overall approach. The Minister of Natural Resources has stipulated that all Forest Management Units in the province will be certified by a credible independent third party as being "sustainably managed". This is to be completed by the end of 2007. The BMFC manager pointed out that there was no requirement in the SFL, at the time of the site visit (June 2006), to move towards certification.



Certification would provide an additional assurance that has broad market acceptance that the quality of forest management on the BMF is of a high calibre, and perhaps assist the shareholder companies in maintaining or increasing market share. However, certification is expensive and, depending on the certification system that is attained, it may require changes in the approaches and processes used by the Company. The manager of the BMFC informed the Audit Team that the Company shareholders have discussed certification and decided that the benefits are not likely to outweigh the associated costs. This is a very valid perspective. At this time (October 2006), the Company was continuing to explore certification.

The Audit Team is reluctant to require the Company to develop a policy statement or take other actions to raise its profile; there is no legal requirement for the Company to have a policy statement. However the Audit Team would characterize the Company's approach as being "reactive", which creates a risk that the Company will not be able to respond quickly or strongly enough to emerging issues.

## Suggestion #1

The Company should consider developing a policy or vision statement identifying its core values and beliefs for management of the Bancroft Minden Forest.

## Suggestion # 2

The Company should consider adopting a more pro-active stance towards publicizing itself and its management approach, and undertake measures to expand its local and regional profile.

The Ministry of Natural Resources has hierarchical policy direction that centres on sustainable forest management. This begins with the terms of the Crown Forest Sustainability Act (CFSA) and extends through to the policy documents (e.g. Policy Framework for Sustainable Forests), terms and requirements of the licence, and forest management guidelines. MNR staff are knowledgeable of their corporate policies and legislation related to sustainable forest management (SFM).

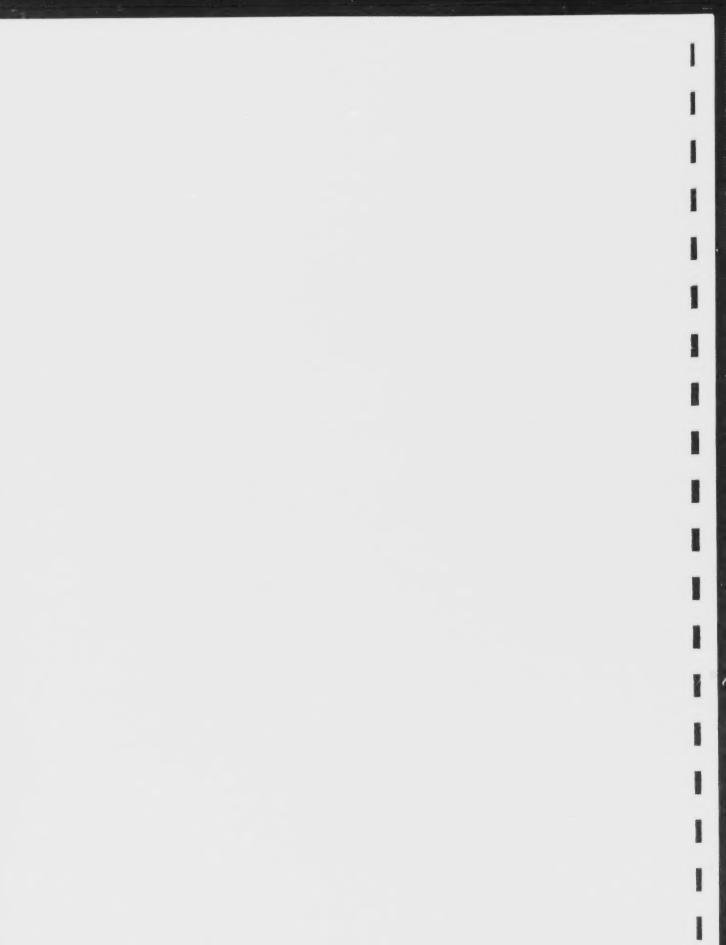
## 3.2 PUBLIC PARTICIPATION

#### 3.2.1 Local Citizens Committee

A Local Citizens Committee (LCC) was established by the Bancroft District MNR in 1999 to provide advice on the preparation and implementation of the 2001 Bancroft Minden Forest FMP.

The current LCC membership list shows 11 members with no alternates; the cochairperson is retiring from the LCC, leaving 10 members. Most members have long standing on LCC and they regularly participate in meetings. Representation on the LCC includes the following parties (with the interests that they represent in parentheses):

- outdoor studies chainsaw, tree marking, etc. educator (local public);
- sawmill owner (forest industry);



- Federation of Ontario Cottagers (soon to retire from the LCC);
- 2 former Councillors (local government/general public);
- Bancroft Field Naturalists (naturalists);
- Haliburton Highlands Outdoor Association (anglers and hunters);
- trapper and independent logger;
- Cavendish Rate Payers (Crown land recreation); and
- independent loggers and Haliburton Chamber of Commerce.

Some interests currently not represented on the BMF LCC include;

- snowmobile and/or All Terrain Vehicle user clubs;
- First Nations:
- mineral sector:
- waterpower sector;
- · local environmental groups; and
- · tourism industry.

MNR has from time to time during the audit period attempted to broaden the LCC membership by advertising for members in local newspapers. MNR has often discussed LCC membership with local First Nations, and invited First Nations to send a representative, but no representatives attended the LCC meetings during the audit period.

The Terms of Reference (TOR) that the LCC operated under during the latter half of the audit period is dated February 2003. We were informed that discussions were underway during summer 2006 between the MNR and the LCC to revise the TOR; the TOR lack some of the requirements outlined in the 2004 FMPM and it is our understanding that staff changes within the MNR and the LCC have prevented a timely revision of the TOR. Several minor deficiencies that were noted and which are required to be addressed in the current effort to update the TOR include: date of each member's appointment; process for selecting members, term of member's service, and the process of membership review to ensure a range and balance of interests is maintained within the LCC.

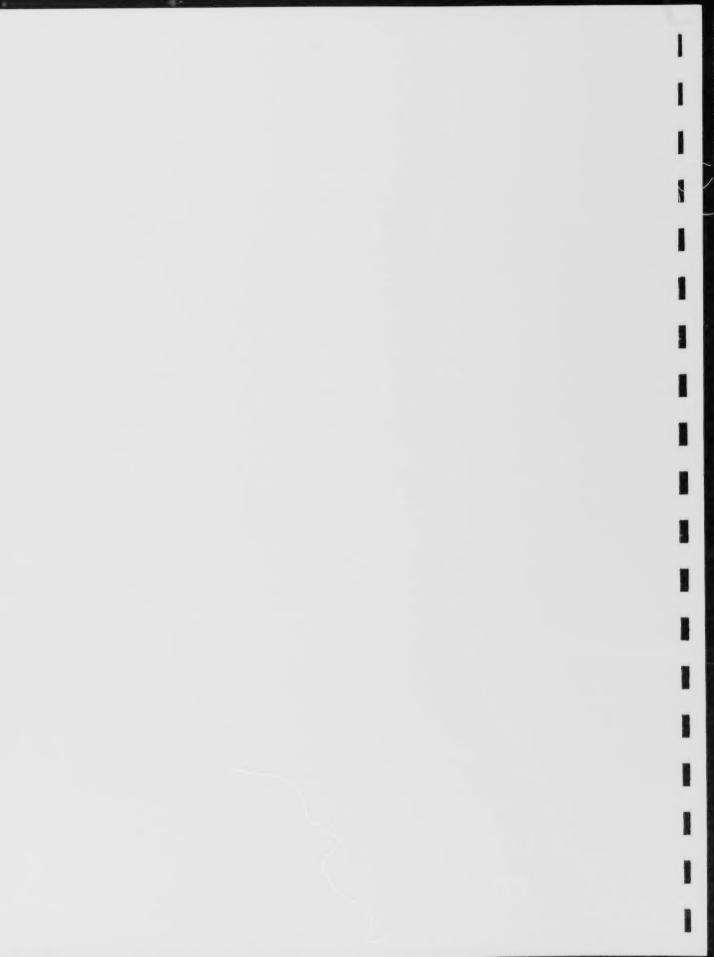
#### Recommendation # 1

That the MNR and LCC complete the revision of the LCC Terms of Reference, following guidelines provided in the Forest Management Planning Manual by March 31, 2007. The MNR District Manager should, with assistance from the LCC, continue to seek to broaden the range of interests represented on the LCC.

## Suggestion #3

The MNR District Manager should consider including alternates for all interests where possible to provide additional LCC membership.

The LCC is currently co-chaired by a MNR District staff person and a member of the LCC. Given that the role of the LCC is to be composed of "local citizens" providing "public input" to forest management planning, it would be preferable for the committee



to be chaired solely by LCC members. While the MNR is crucial to providing assistance to aid the functioning of the LCC (financial assistance, training, meeting space, forest management plan information, etc), the LCC should act as an independent body with its own leadership taking on the responsibility for running its affairs such as creating agendas for meetings, seeking advice, etc. As the LCC co-chair is currently retiring, and the MNR and LCC are currently having discussion regarding the revision of the LCC TOR, membership and the representation of stakeholders, and the selection of a new chairperson, this would be an appropriate time to establish a chairperson(s) from the LCC membership.

## Suggestion # 4

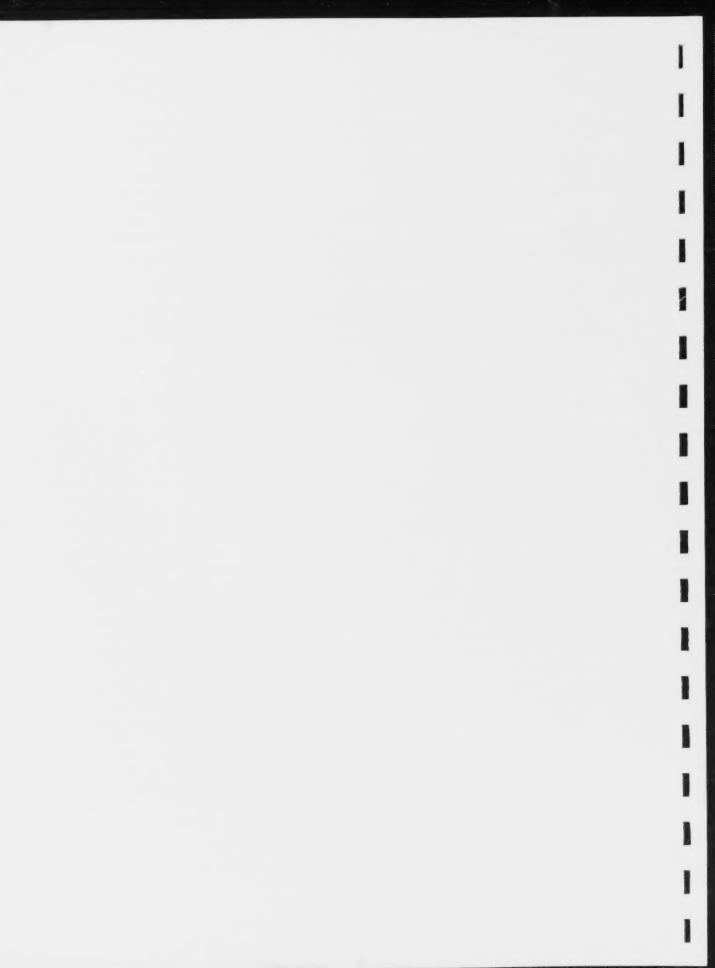
The LCC should consider revising its structure so that a single chairperson or two co-chairs are selected from within its membership.

Out of the total 11 LCC members, eight were interviewed during the audit. LCC members spoke positively of their experience participating in the development and review of sustainable forest management on the BMF. Some key observations of the LCC are as follows:

- members interviewed demonstrated good understanding and participation in forest management planning;
- the MNR has provided good logistical support to the running of the LCC;
- the LCC has benefited from special presentations made by the MNR, BMFC and other invited guests at LCC meetings;
- the LCC has made a number of visits to the BMF facilitated by MNR and BMFC;
- · the LCC has reviewed AWS documents and minor amendments;
- the LCC has participated in plan review (though a LCC member was not on the planning team); and
- the LCC has participated in regional LCC meetings.

However, the LCC is quite polarized, and has been unable to find common ground on a number of key forest management issues. This situation may well be an accurate microcoosm of local attitudes, but it hinders the LCC from providing unanimous advice to the District Manager on a number of issues. This situation is causing considerable frustration and led one LCC member to bump-up the 2006 FMP.

The number of LCC meetings held during each calendar year of the audit period is shown in Table 4. The frequency of meetings fluctuated considerably over the audit period; in three years of the audit (2001-2003) there were three or fewer meetings per year with a quorum, and there was a twelve-month period during which no LCC meeting was held. It is recognized that there are times of the year when it may be difficult to hold LCC meetings (during summer or over the Christmas season), and that there are times when there is a greater necessity to hold meetings (during FMP development or at the beginning of the year for AWS review).



To ensure regular input and greater continuity of effort, the Audit Team feels it would be preferable for there to be at least three LCC meetings in any one year and there should not be extended periods without meetings. In addition, LCC meetings are most effective when there is a quorum, this in turn validates the efforts made by those LCC members who do attend. The average of approximately 1 out of 4 meetings being held without a quorum may frustrate attempts to act on certain agenda items. The LCC may wish to consider means to ensure greater attendance of meetings by LCC members and/or reducing the current rule of six members required for a quorum.

Table 4. Record of LCC Meetings and Meeting Quorum.

Year	# of LCC meetings	# of LCC meetings with a quorum
2001	3	3
2002	2	1
2003	4(?) *	2 (?) *
2004	7	6 (?) *
2005	15	12
Average	6 per year	77 % of meetings had a quorum

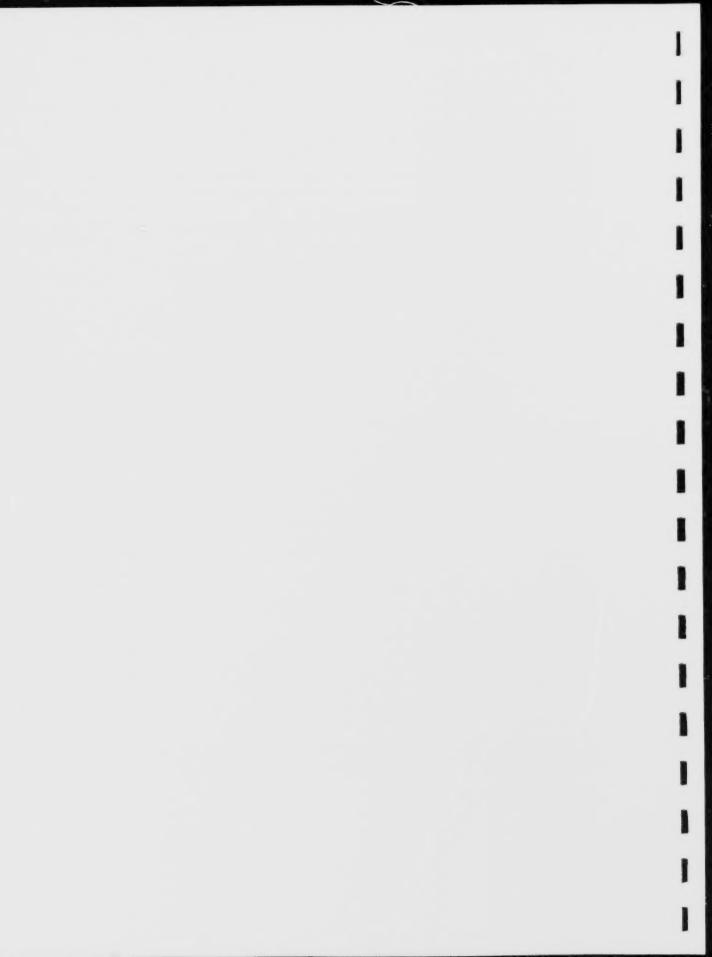
<sup>\* (?)</sup> indicates meeting minutes either not available or meeting minutes do not provide sufficient information to make an accurate determination of the number and names of persons attending meetings.

The Audit Team was provided with electronic copies of LCC meeting agenda and minutes. The Audit Team also reviewed the available hard copies of LCC meeting agenda and minutes at the MNR office in Bancroft. The organization of meeting agenda and minutes was poor and the information in the meeting minutes was in some cases incomplete. The content of LCC minutes should include at a minimum the following: meeting date, location, start time, LCC members attending/LCC members not attending, presence of a quorum, other persons attending, meeting agenda, issues discussed, action items, materials distributed (if applicable), date/time/location of next proposed meeting if known, and closing time. Copies of presentations or background material presented or reviewed at the meetings would also be helpful. While many minutes had many of these elements, content was variable and in some cases lacking many of these key elements. While maintaining electronic files for agenda and minutes is desirable, an improved file naming protocol is required to permit easy cataloguing of electronic records (e.g. "2006 January BMF LCC minutes").

#### Recommendation # 2

That the LCC and MNR ensure that LCC meetings are held on a regular basis, and improve the content and organization of LCC meeting minutes.

An important role of the LCC is participation in the development of the FMP. The FMPM states that the LCC "may nominate" one of its members to serve on the planning team, but this did not happen for the 2006-2011 FMP. In order to keep the LCC apprised of plan development as much as possible, MNR and BMFC made presentations on topics of interest to the LCC at regular LCC meetings. The frequency of LCC meetings



increased substantially during planning, especially in 2005, as can be seen from Table 4. The LCC was active during the audit period providing valuable input to the FMP process, bringing forward concerns from a variety of interest groups and carefully examining operations on the forest through field visits. This interaction by the LCC has resulted in a number of positive contributions to SFM on the BMF; yet for some of these concerns there remain some unresolved issues. Examples of LCC contributions and unresolved issues include clearcutting (more fully discussed in section 3.3.7) and the protection of wetlands, rivers, streams and lakes (see section 3.4.1).

Another area of interest on the part of the LCC during the audit period was beaver habitat enhancement. The LCC brought forward the concerns of trappers in regard to the provision of improved beaver habitat around water bodies. This primarily involves non-commercial removal of coniferous species to encourage the development of poplar as forage. The BMFC has undertaken beaver habitat enhancement in some of its operations and these operations were viewed positively by the LCC.

However, despite the efforts on the part of all parties to explore and resolve issues, some elements of the 2006 FMP were not supported by some LCC members, and a "bump-up" request was made an LCC member (see section 3.3.8). The Audit Team feels that there might have been greater agreement reached regarding the content of the plan had an LCC member been a member of the planning team; Recommendation # 4 is intended to address this.

The current process used by the LCC to review amendments relies on the MNR to categorize amendments as administrative or minor prior to their review by the LCC. While this process does streamline the amendment review process, it would be beneficial to have a protocol or a set of specific criteria developed and agreed upon by the LCC and MNR to ensure a consistent and transparent review process that is efficient but retains the involvement of the LCC.

## Suggestion #5

A protocol or set of specific criteria should be developed and agreed upon by the LCC and MNR to categorize administrative and minor amendments.

The LCC has expressed an interest to have members participate in special meetings to gain a better understanding of SFM and to attend regional LCC meetings to share experiences among different LCCs. Supporting LCC members' desire to learn and share ideas promotes greater involvement of LCC members and acknowledges their efforts as volunteers contributing to SFM. During the audit period, the Audit Team is aware that one regional LCC workshop was held in North Bay. The workshop was an opportunity for LCC members to meet and share experiences and ideas, to hear about some recent MNR research initiatives, and provide information on a key issue (herbicide use). District MNR invited all Bancroft Minden LCC members to attend the session and three members attended, with their spouses. MNR paid for rooms, meals, travel and session fees. The Audit Team feels that it is appropriate for MNR to continue to support the attendance of one or two LCC members at relevant meetings, workshops and regional



LCC meetings. Budgetary constraints would mean that there would be a need to be selective about what events to attend.

## Suggestion # 6

MNR should place a high priority on providing the additional logistic and financial support to host and/or assist LCC members in attending regional/inter-regional LCC workshops and meetings.

## 3.2.2 FMP Standard Public Consultation Process

The FMPM outlines the required timing and distribution of notices for each stage of the FMP process, AWS review, Herbicide Application notification, and Prescribed Burning notification. The MNR files for Public Consultation on the BMF for the 2006-2011 FMP are well organized, making it possible to review the public consultation notices submitted to local newspapers.

Many, but not all, of the FMPM requirements for notification of Public Consultation opportunities were met. Standard advertisements were used to provide notice of the various planning stages. Public notices were not published in native media, as is required, and Recommendation # 3 addresses this deficiency.

One member of the public, who is also an LCC member, raised four issues with the 2006 FMP that were taken to MNR's dispute resolution process. The outcome of the dispute resolution was not satisfactory to the LCC member, who then bumped up the 2006 FMP. The concerns that this person had with the plan concerned the impacts of climate change and acid precipitation, what was seen by the LCC member as an excessive use of clearcutting (discussed in 3.3.7), and the principle of the industry self-compliance system (compliance is reviewed in section 3.6.1). The issue resolution and bump-up process were undertaken as specified, with the bump-up request coming at the end of March 2006, just at the end of the audit term. The bump-up request was still under consideration by the Ministry of the Environment at the time of the audit, which is within the one-year timeframe identified for review of bump-up requests.

# 3.2.3 Native People's Consultation

There are no First Nation reserves within the BMF; however the Algonquins are currently involved in land claim negotiations with the province of Ontario and the Federal government, and a number of First Nations communities are located in proximity to the BMF. Nine First Nations were consulted during preparation of the BMF FMP; these First Nations are shown in Table 5. No First Nations expressed an interest to participate in the Special Native Consultation Program during preparation of the 2006-2011 FMP and none were members of the planning team. A draft Native Background Information Report initially prepared in December 1999 by the Algonquins of Pikwakanagan on behalf of the Algonquin Nation of Ontario was updated for the 2006-2011 FMP. In addition, Native Values Mapping has been prepared for consideration in FMP preparation.



Activities of First Nations within the BMF include part ownership of the BMFC by the Algonquins of Whitney through a share held in the Bancroft Independent Loggers, a shareholder in the BMFC. In the past, the Algonquins of Pikwakanagan and the Curve Lake First Nation have requested and received access to firewood. The Native Background Information Report states that First Nations people continue traditional harvests such as fish, wildlife, food plants, and birchbark, cedar trees and spruce roots and gum for crafts. Some individuals from First Nations participate directly in the forest industry through their personal companies or through employment in a variety of trades including tree marking, seed harvesting, logging, silviculture, sawmilling, etc.

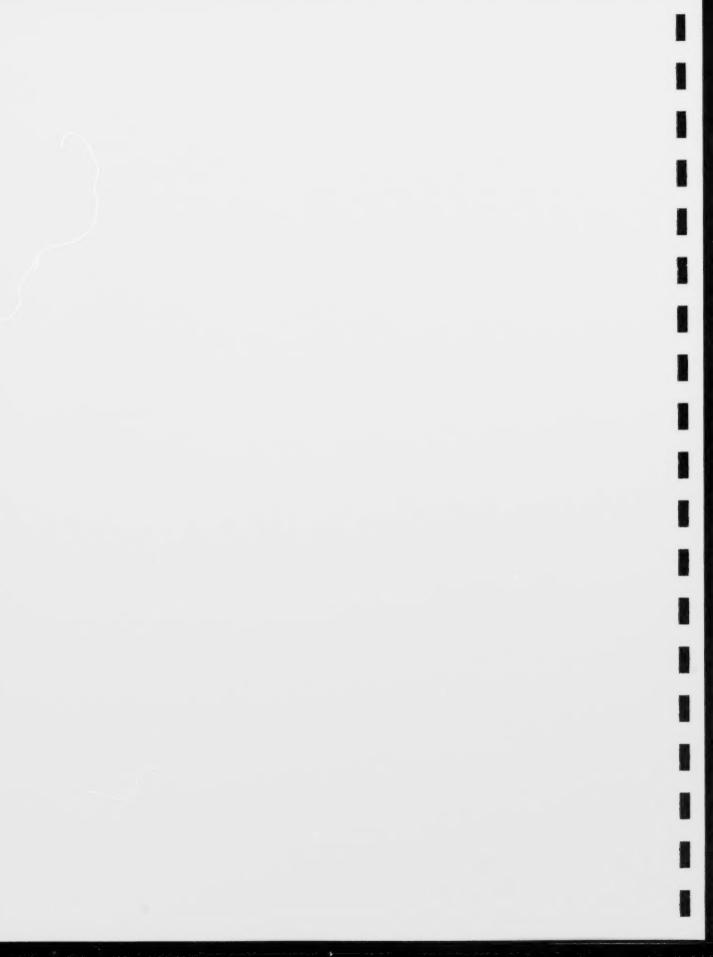
All First Nations were contacted by the Audit Team by mail, fax and by phone (minimum of three calls leaving messages on separate occasions). There was limited direct feedback from First Nations, Chief Kris Nahrgang of the Kawartha Nishnawbe expressed a desire for SFM whereby the BMF continued to provide traditional harvest resources as well as protection for archeological resources. The Chief of the Alderville First Nation wanted the Audit Team to be aware of the Williams Treaty<sup>4</sup> and its potential implications for Crown land resources for First Nations. The Audit Team also had comprehensive discussions with staff of BMFC and MNR District. These latter discussions did not highlight any significant, outstanding issues that First Nations were currently pursuing in regard to SFM on the BMF.

Table 5. Contact list for First Nations with an interest in the BMF.

Location Pikwakaganan	
Maynooth	
Curve Lake	
Port Perry	
Keene	
Roseneath	
Rama	
Lakefield	

Sections 1.4.6 d) and 1.4.6 e) of the Nation Background Information report in the 2006-2011 FMP provide a summary of forest management related problems and issues specific to native communities which arose during implementation of the 2001-2006 FMP. There were a number of issues raised by First Nations people, in contrast to the lack of issues identified during Audit Team discussions with First Nations or BMFC and MNR staff. One of the key issues identified in the Native Background Information Report is the

<sup>&</sup>lt;sup>4</sup> According to the Chief of Alderville First Nation, the Williams Treaty (1923) applies to the following five First Nations within portions of the BMF: Hiawatha First Nation, Chippewas of Mnjikaning, Curve Lake First Nation, Mississaugas of Scugog Island, and Alderville First Nation. The Treaty extinguishes harvesting rights without an appropriate permit while continuing to protect traditional spiritual and cultural sites within the BMF.



desire for a larger harvest allocation on the part of the Whitney Aboriginal Loggers Association (WALA). While many other shareholders are probably also interested in larger allocations, the underharvest on the forest is substantial enough so that additional opportunities might be provided to First Nations through WALA.

## Suggestion #7

# The BMFC should attempt to provide additional harvest opportunities to First Nations.

In order to provide the best opportunity for First Nations to be aware of BMF management planning (FMP), logging operations (AWS, herbicide application, burning, etc.) and employment opportunities, the use of First Nations media is preferred. First Nations media are developing and represent a useful channel for reaching Aboriginal people. The 2004 FMPM indicates that an FMP planning consultation approach, which would ideally be developed jointly by MNR and each interested First Nations community, would include the identification of local publications in the Aboriginal media which are used by the community (FMPM 2004, pg A-131) should be used to communicate with First Nations. The FMPM also specifies that the default approach includes the placement of planning notices in local First Nations media.

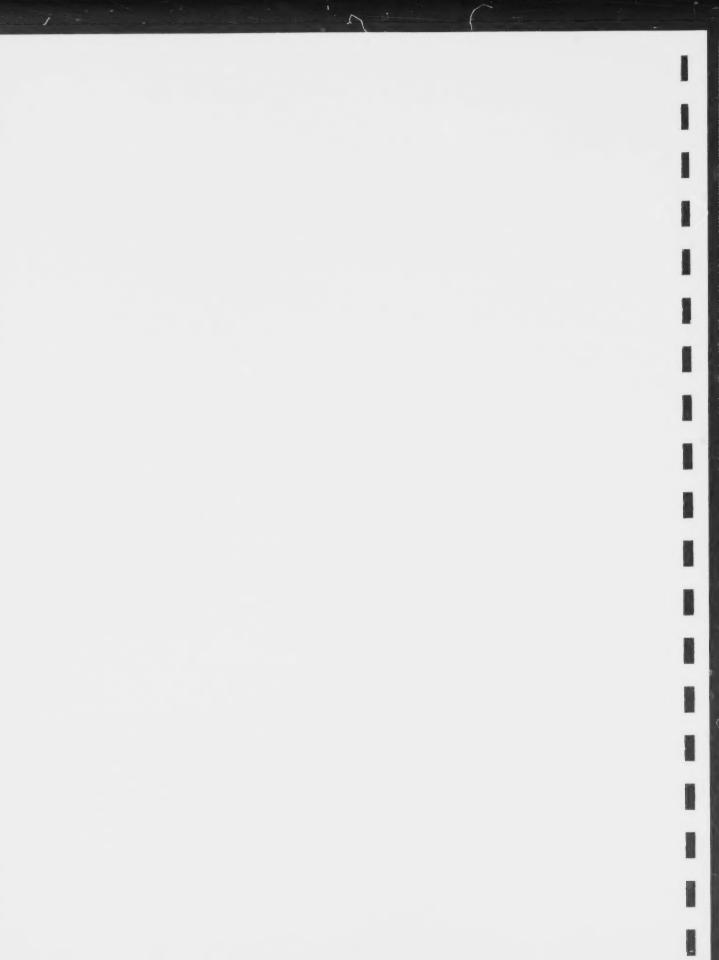
Public notices regarding activities of the BMF are not currently published in any native media and, as the 2004 FMPM indicates, this is an FMP planning requirement and it would be appropriate to extend it to other aspects which require public notification. There are a variety of local Aboriginal media available; the Audit Team is aware that Curve Lake First Nation, Hiawatha First Nation, and the Algonquins of Pikwakaganan regularly publish a newsletter that is widely read by the community. Conversations with these First Nations have indicated that public notices published in these newsletters would be effective in reaching First Nations people. There are also at least two First Nation newspapers, Anishinabek News (offices in North Bay with a print run of almost 12,000 copies) and Turtle Island News (published by Six Nations of the Grand River), available within First Nation communities that could also be used for BMF public notices.

#### Recommendation #3

That the MNR and BMFC include appropriate First Nation media when they publish public notices related to planning and operations.

# 3.2.4 Annual Work Schedule Public Inspection

The preparation of an Annual Work Schedule (AWS) prior to the commencement of operations allows the public and First Nations an opportunity to review what activities will be occurring on the BMF in the coming year. Information of particular interest to the public and First Nations includes the timing and location of herbicide spraying, renewal and tending operations that may provide local employment, the timing and location of slash pile burning or prescribed burns, and the availability of public fuelwood.



## 3.3 FOREST MANAGEMENT PLANNING

# 3.3.1 Planning Team Activities

This audit reviewed the efforts of the Planning Team (PT) in the preparation of the 2006 FMP, as these activities occurred during the audit period.

The Terms of Reference (TOR) for the Planning Team contained the direction required in the FMP; they were appropriately detailed so as to ensure that all required topics were covered and that all PT members had logically-identified responsibilities. We note, however, that the Planning Team did not contain representation from all the interests/areas of expertise noted in the FMPM. The lack of LCC and First Nations representation is discussed in Section 3.2. Efforts have been made in the past to include LCC and First Nations representatives on the Planning Team, but these have not come to fruition. Recommendation # 4 below notes that the MNR and Company should continue in their efforts to achieve this representation on the Planning Team.

#### Recommendation # 4

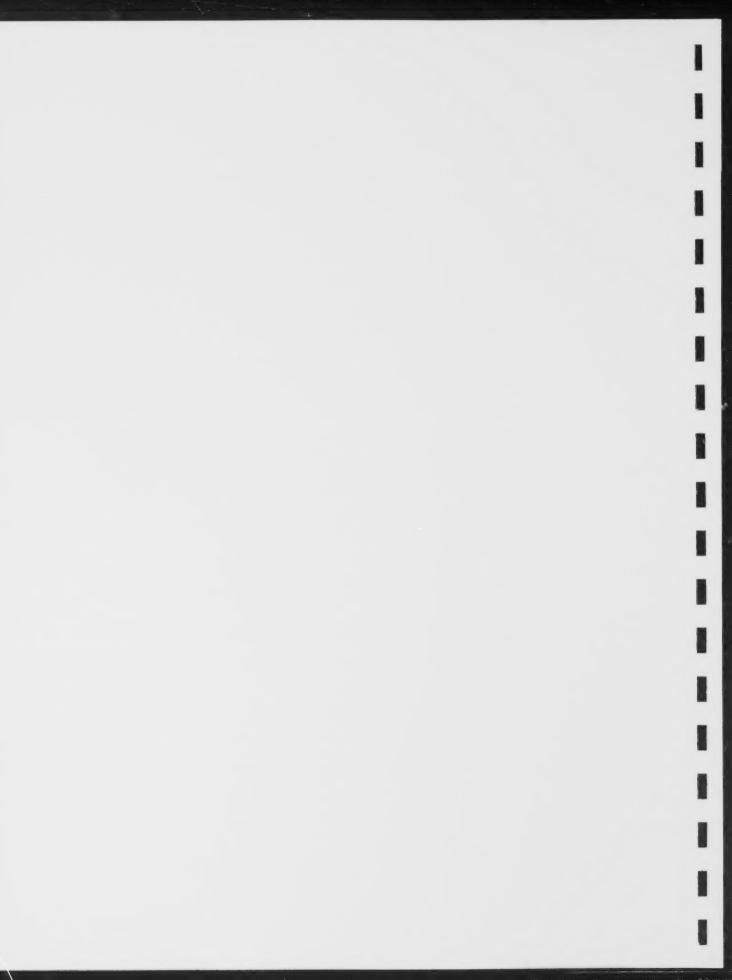
That the MNR and Company continue to offer the LCC and First Nations opportunities for representation on the Planning Team for the 2011 FMP. It is also recommended that LCC members sign attendance ledgers to record their participation in public information centres.

Over the course of preparing the plan, the PT held 35 meetings. The meetings were documented sufficiently so as to be able to trace the continuing discussions and resolution of important topics. The quality of the minutes improved over the course of the PT's tenure. Of the ten members of the PT identified in the FMP, a core of seven members attended most meetings. Other members and occasional guests attended when issues related to their particular areas of expertise were scheduled for discussion.

Public input to the planning process was solicited using standard advertisements to provide notice of the various planning stages. A review of the mailing lists for the information centres revealed that the groups and individuals contacted included those required by the FMPM.

Attendance ledgers of public information centres indicate that most PT team members were in attendance. Discussions with LCC and PT members indicated that many LCC members were present as well, but this was not evident on the attendance ledgers, which indicated that only one LCC member was in attendance. Attendance of representatives of the LCC at information centres is a requirement of the FMPM.

Recommendation # 4 directs LCC members to record their participation in information centres so that evidence of their participation is generated.



The MNR's FMP correspondence binders were well organized with inquiries from members of the public kept with copies of the MNR's responses. The vast majority of inquiries received thoughtful responses. There was no record of response for a couple of inquiries and the replies for some took longer than the fifteen-day MNR Public Correspondence Service Standard. All in all, however, MNR's efforts at dealing with public inquiries were good.

# 3.3.2 Resource Stewardship Agreements

The procedures for soliciting interest in the development of Resource Stewardship Agreements (RSA's) from registered tourism operations were followed by the Company, but to date no RSA's have been concluded. The Ministry of Tourism & Culture provided the list of registered operations to the Company on Oct 1, 2003; there were approximately 40 outfitters on the list. The Company used a variety of methods, including registered letters and e-mail, to invite operators to negotiate an RSA. There was some interest on the part of some operators to pursue an RSA but after further discussion and consideration, none of them chose to further pursue an agreement.

## 3.3.3 Sources of Direction

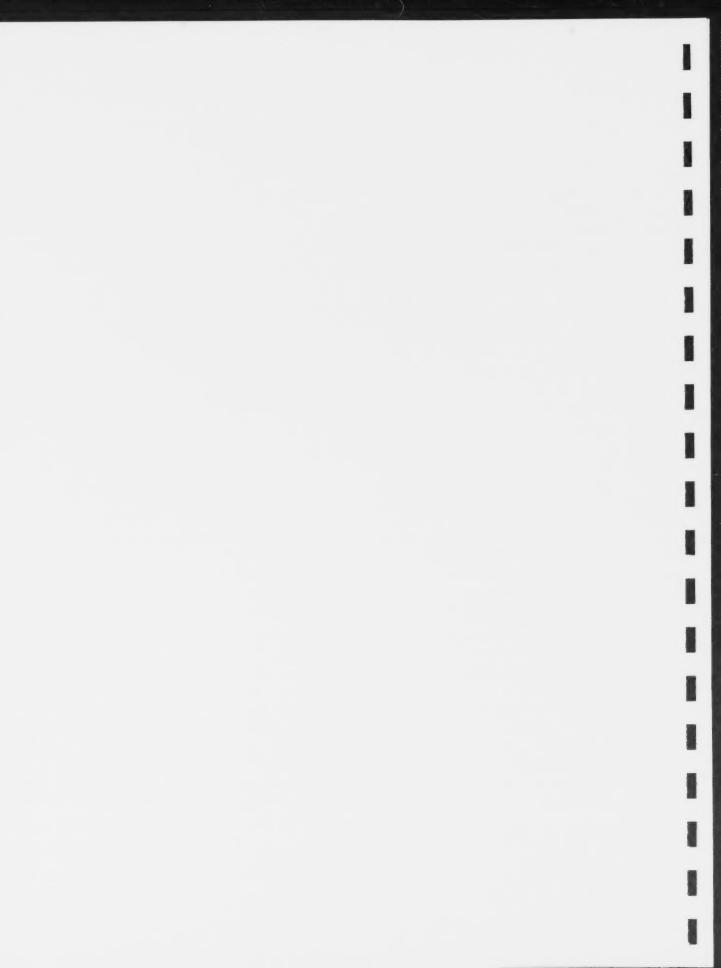
The FMPM requires that forest management plans pay heed to a variety of sources of strategic and planning direction, including:

- MNR's provincial goals, objectives and policies for natural resource management;
- Forest management guides (implementation manuals);
- Applicable regional- and district-level land use direction;
- MNR internal operational audits and independent audits for the management unit;
- Strategic business direction for forest-based businesses;
- The results of ongoing negotiations with Aboriginal peoples whose communities are situated in the management unit; and
- Licences regarding resource management on the Forest.

This audit found adherence to all key elements of the sources of direction. The 2006 FMP makes consistent use of, and reference to, relevant sources of direction. Examination of field practices also satisfied the Audit Team that the sources of direction were adhered to during operations. As all audits do, this audit identified some instances in which adherence to management direction should be improved, however, considered as a whole, the Audit Team is satisfied that relevant sources of direction have been followed.

## 3.3.4 Plan Introduction

The Introduction section of the 2006 FMP contains the elements required by the FMPM, including an index to the environmental components of the Plan and a brief description of how MNR's Statement of Environmental Values under the Environmental Bill of Rights had been considered in plan development.



# 3.3.5 Management Unit Description

## Forest Resource Inventory

The Forest Resources Inventory (FRI) for the BMF is a combination of separate FRI's for the Minden and Bancroft CMU's, which were both based on 1987 aerial photography. For the 2001 FMP, both FRIs were updated to 1998 using harvest, renewal and tending, and assessment data; the update was completed in the fall of 1999. Then, the planning database was created from the updated FRI sets, and forecasts of activities for the remaining term of the 1996 FMP, to ensure the data reflected an accurate estimate of conditions to 2001.

The inventory required significant adjustment and correction so that the available landbase was accurately identified. There were numerous errors with the Crown land and patent land ownership layers, and a 10-20% overestimate of available basal area in hardwood stands for both Minden and Bancroft. These problems were resolved prior to preparation of the FMP. There was also a requirement to remove unavailable lands from the landbase identified as being available. The 2001 FMP includes a concise description of a "netting down" procedure used by the plan author to address some perceived shortcomings of the FRI. With the help of the former Minden unit forester, the planning inventory was compared against the previous inventory and adjustments made where necessary. This resulted in the designation of significant areas of forest as production forest reserve (PFR), which are not eligible for harvest, and a more precise planning database (or available harvest area).

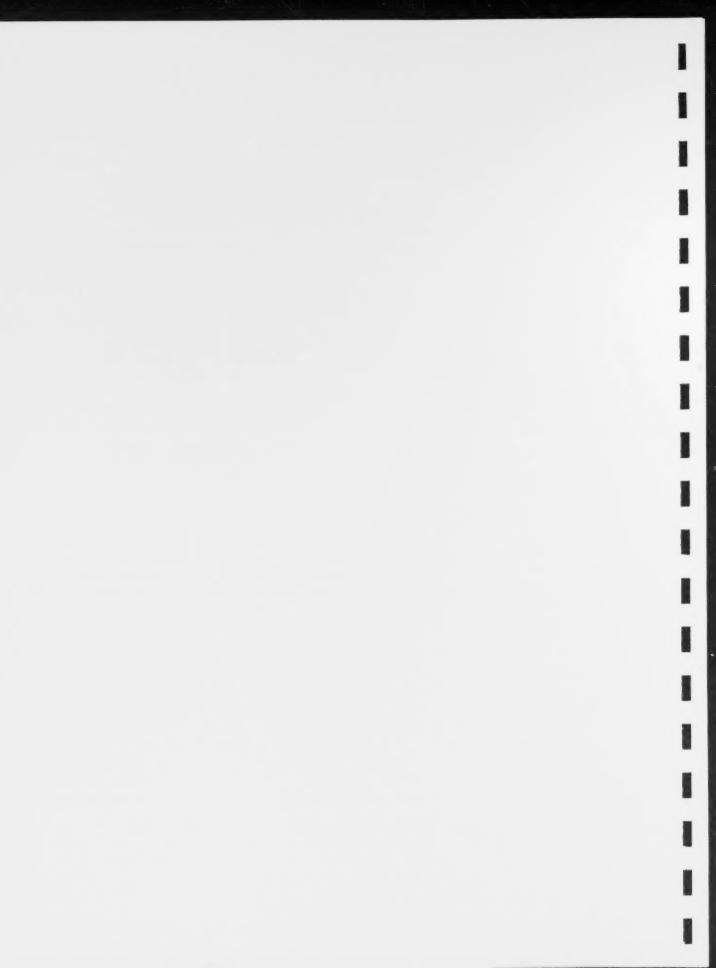
There were a considerable number of instances found where the forest unit that was shown in the FRI was different from that found on the ground. This is perhaps more the result of the frequent mixed species compositions in many stands and the larger number of hardwood species than are found in the boreal forest than the relatively old age of the inventory. One implication of this was discussed in section 3.4.2. The Company staff are comfortable working with the inventory, since many of the discrepancies are due to "known unknowns" – a new inventory should prove to be helpful but may also contain new sources of error.

# Forest Management Plan Description of the Forest

The 2001 and 2006 FMPs describe the Forest well, for the most part. Descriptions of the current forest condition include all the required tables and good discussions of:

- the Forest's ecological communities
- landscape patterns and processes;
- wildlife habitat and species on the forest, including rare, threatened and endangered ones;
- the Forest's geology and soils; and
- industrial and recreational uses of the Forest.

However, the description of the historic forest in the Plan provides only a very brief assessment and does not contain several of the elements required of the FMPM. The Audit Team believes that the plan does not make full use of recent reports on the historic



forest which were available at the time the plan was being written<sup>5</sup>. The plan provides only a rather cursory description of the historical presence of forest communities and it does not provide information on the following topics identified as requirements by the FMPM: natural processes; disturbance size and pattern; stand sizes; flora and fauna. Given that historic, or natural, forest conditions are used as a benchmark for establishing forest management objectives under the CFSA, it is very important to have appropriate data upon which to base the development of objectives.

#### Recommendation #5

That the Company and MNR ensure that the 2011 FMP contains a description of the historic forest which meets the complete requirements of the FMPM.

The socio-economic profile is well-written and meets the requirements of the 1996 FMPM, however the profile as a whole does not do justice to the complexity of the socio-economic context of the forest area. Little mention is made of seasonal residents or First Nations communities; the importance of tourism and recreation is opaque, and no information was obtained regarding investment intention, which is a common gap in socio-economic profiles in the province. Revised socio-economic profile requirements in the 2004 FMPM should address some of these gaps.

# 3.3.6 Objectives and Strategies

The CFSA and FMPM require that FMPs contain objectives that address forest biodiversity, social and economic matters, silviculture and the provision of forest cover for relevant values. Both the 2001 and 2006 FMPs contain objectives in each of these four subject areas. The objectives for the 2001 FMP are listed in Table 14 and the degree to which the objectives were achieved is assessed.

In general, the objectives in the 2006 FMP were similar to those in the 2001 FMP, but a number of the more specific objectives in the 2001 FMP related to such aspects as forest unit area and habitat area were removed as objectives. In some cases, these 2001 objectives appeared as targets in the 2006 FMP, while in other cases they were replaced with more general statements (e.g. the red shouldered hawk objective in the 2006 FMP was to "Maintain or increase red-shouldered hawk habitat", whereas the 2001 FMP specified habitat areas.

In our review of the ecologically-oriented objectives of the 2006 FMP we found that they addressed an appropriate breadth of topics to show that the planning team had followed the direction of the FMPM. However, the discussion of the topics was very brief. For each value for which there was an objective, the plan identified the objective, one or more targets, and strategies for achieving the objective. No discourse was provided rationalizing either the targets or the strategies by which the objectives were to be

<sup>&</sup>lt;sup>5</sup> Pinto, F., Romaniuk, S., and Ferguson, M. Unpublished. Presettlement forest composition of the Bancroft Minden forest. Southern Science and Information, Ontario Ministry of Natural Resources. North Bay, Ontario. Leadbitter, P., Euler, D., and Naylor B. 2002. A comparison of historical and current forest cover in selected areas of the Great Lakes-St Lawrence Forest of central Ontario. Forestry Chronicle Vol 78(4).



achieved. Upon reading the document, the Audit Team was left questioning the basis for many of the objectives and targets. Upon discussion with planning team members, and review of planning team minutes, it became obvious that the objectives and targets had been developed based on thoughtful discussions and with deliberate rationale. The lack of reflection of the rationale in the plan devalues the plan – readers cannot always intuit the rationale and, as was the Audit Team, can be left wondering about the basis upon which the objectives were set.

Upon discussion with the planning team, we learned it was a deliberate decision to use a parsimonious writing style in the plan. While this is understandable in that it can reduce the burdensome amount of effort involved in writing an FMP, we feel that the planning team went too far in that direction in providing the very limited amount of explanatory text in the objectives and strategies portion of the FMP. Since the FMP is the key forest management document, Recommendation # 6 prompts the next planning team to provide full explanations of the objectives, targets and strategies used in the plan.

#### Recommendation # 6

That the Planning Team for the 2011 FMP ensure that the plan contains full explanations for the objectives, targets, and strategies used in the plan.

The objectives and strategies for Forest Renewal and Tending were clearly defined in the 2006 FMP, and the discussion of silvicultural systems and the development of Forest Units demonstrates a clear understanding of forest dynamics at the local level.

During the field portion of the Audit, BMFC staff demonstrated diligence and care in their efforts in the field to go to great lengths to meet silviculture objectives. Situating group openings within tolerant hardwood stands to encourage the regeneration of midtolerant species where appropriate is one example. Expanding and formalizing these types of activities with more specific objectives, strategies, and targets in the planning process is the subject of Recommendation # 16.

#### **Old Growth**

The 2006 FMP contained two old growth objectives:

- "To identify, consider, and provide for forest age class structure needed to
  maintain functional old growth ecosystem conditions in forest units (ecosites) for
  all forest communities (provincial forest types) within the management unit as
  part of future forest conditions consistent with the old Growth Policy for
  Ontario's Crown Forests (MNR 2003); and
- To contribute to maintenance of red and white pine, including old growth stands, while permitting a sustainable harvest of red and white pine now and in the future."

The Planning Team identified old growth targets for each of the Forest's even-aged forest units. The Audit Team is concerned that the targets are rather meager and do not do justice to the Ministry's direction for setting old growth objectives identified in its Old



Growth FMP Note<sup>6</sup>: "current, future and historic conditions will be used to guide the development of old growth objectives and targets that protect and/or restore, the distribution and abundance of each forest community towards their natural geographic ranges...". Based on SFMM modelling, both the future and historic conditions exceed, by considerable measures, the identified old growth objectives.

Table 6 shows that the old growth targets for every forest unit are considerably below the benchmark natural conditions estimated by the SFMM null run, which is a simulation of how the current forest would develop in the absence of harvesting and under a natural disturbance regime (this may be viewed as a proxy for historical conditions). The old growth targets are also well below the old growth levels that are predicted to be in the selected management alternative at the time of the defined future forest condition (DFFC). We also note that the old growth targets are well below those set for other SFLs with similar management contexts. Having the targets set so low is not consistent with the Old Growth FMP Planning Note direction to use future and historic conditions in setting old growth targets.

In interviews with the planning team, we learned that the old growth targets were set low to eliminate any chance that they would change the allowable harvest level. While the setting of targets is often an iterative process in which targets for other elements are used to help set bounds for values, we feel that the margin of safety is too extreme in this instance, and that the approach is not consistent with the direction identified in the MNR's FMP note. Old growth targets could easily be much higher, and they should be for this Forest.

Table 6. Old growth targets compared with present, benchmark natural, and projected old growth on the forest (including parks and protected areas). Old growth areas are expressed as a % of the Forest Unit on the Forest. (Sources: 2006 FMP Section 2.3.1.3.2, and FMP Table 36)

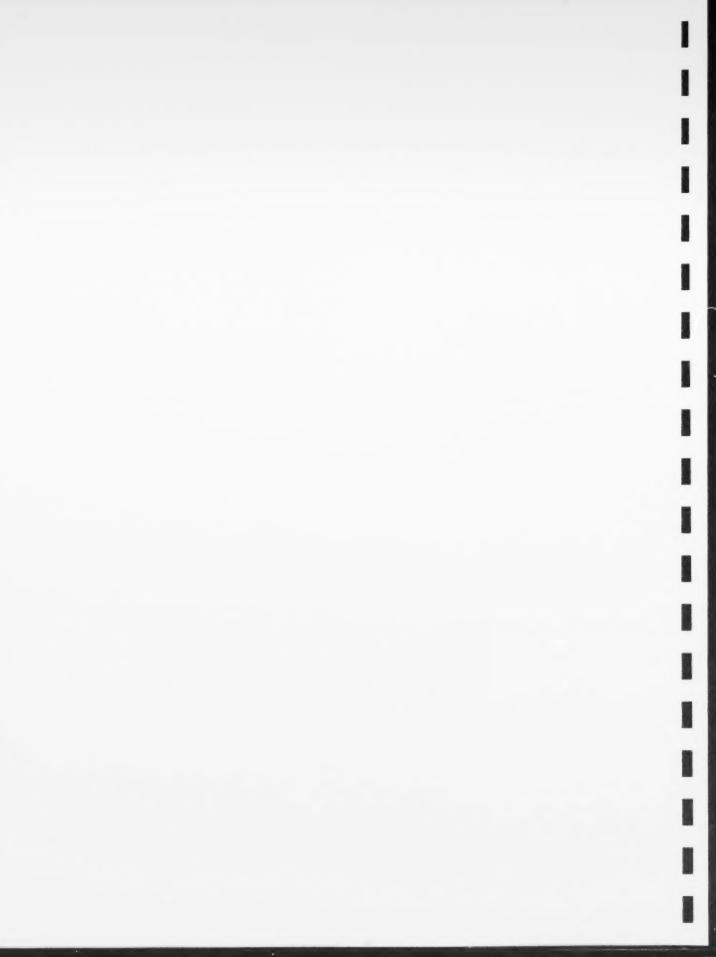
Forest Unit	Old Growth Target	Current Old Growth Area (ha)	Benchmark Natural Old Growth Area	Future Old Growth Area (at the DFFC) <sup>2</sup>
CM1	5%	5%	11%	8%
INT1	5%	12%	20%	8%
MWI	5%	1%	13%	8%
OC1	5%	17%	74%	86%
PJ1	2%	0%	12%	10%
PR1	5%	0%	28%	34%
HD4	5%	2%	37%	11%
OR1	5%	2%	65%	69%
PW1	5%	3%	36%	43%

<sup>-</sup> As assessed by the SFMM Null Run.

ArborVitae Environmental Services Ltd.

<sup>&</sup>lt;sup>2</sup> – As predicted from the SFMM run of the Selected Management Alternative.

<sup>&</sup>lt;sup>6</sup> Ministry of Natural Resources. FMP Notes. Old Growth. Sept. 9, 2003.



### Recommendation #7

That the Planning Team for the 2011 plan set old growth targets in a manner consistent with MNR's corporate direction.

# Wildlife Habitat

As required by the FMPM, the Strategic Forest Management Model (SFMM) was used to assess the sustainability of the habitat of selected wildlife species for each of the management alternatives under consideration. In this case there were 17 species selected and tested in the five management alternatives as part of the 2001 FMP development process. These are part of the sustainability test across the Great Lakes St. Lawrence Forest Region.

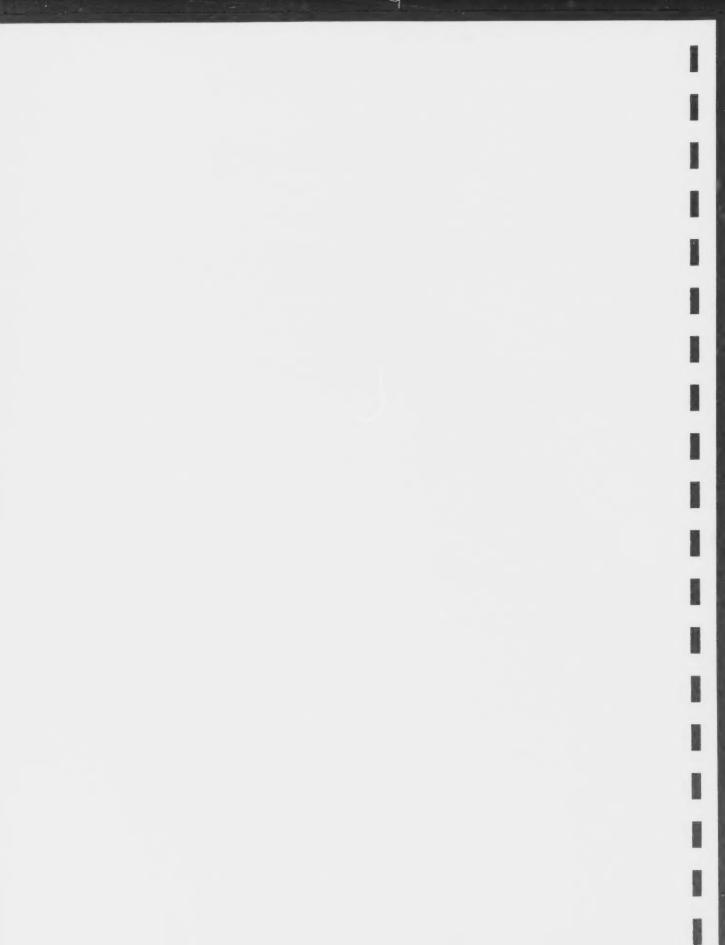
SFMM tracks non-spatial habitat data for each of the species over a 100-year time span, and forecasts available and preferred habitat over this period for each management alternative. To pass the test of sustainability, the management alternatives should not cause any of these representative habitats to drop lower than 20 percent below the minimum "null run" values.

This region is blessed by having a largely continuous forest cover with a large amount of mature forest, due to the wide use of the selection and shelterwood systems of management. All of the management alternatives tested resulted in habitat areas that were greater than the lower bounds of sustainability for all terms. All alternatives for all species habitat types were deemed to be sustainable.

In the 2006 FMP, a similar approach to testing habitat was employed. Two species – lynx and black-backed woodpecker - were added to the suite of indicators to serve as old growth indicators. All habitat indicators except black bear summer foraging habitat were met by all of the management alternatives during the 100-year test period – a constraint to provide at least 6,000 ha of black bear habitat was added to meet requirements.

As mentioned above, white-tailed deer is a key wildlife species, which is often constrained by winter habitat, which is among the most important values identified in Bancroft Minden Forest. Specific habitat management when applied properly can benefit deer winter habitat greatly. The forest management prescription entails retaining identified bedding areas and travel corridors with 80% crown closure. This must be dispersed through the stand, otherwise normal harvesting and renewal applies to pine, spruce, hemlock, cedar, conifers other than hemlock and cedar and areas of poplar.

Reaching the plan objective for deer requires more than just a prescription. As the plan states: "The maintenance of winter habitat quality and quantity in appropriate locations and control of the antlerless deer harvest through the antlerless permit system, are the leading deer management strategies employed in this management unit." In other words reaching the goal of a sustainable, harvestable deer population needs more than just complex forest management.



Currently, the Bancroft Minden Forest supplies 14% of the white-tailed deer winter habitat in the portion of the Southern Region that is subject to Forest Management Planning. Although forecasts of deer wintering habitat are positive, optimizing that habitat requires planning and specific implementation. Specific planning for deer wintering areas in the district has been done in the past and there is one up-to-date plan for one of the major deer wintering areas in the Bancroft area. The role of deer wintering areas has changed in recent years given highly variable winters, deer feeding by the public, and population increases in many areas. Based on the planning documents, we feel that a review of the deer winter area plans is appropriate, even though the plans may require minimal action. This important value is part of the land use direction that was established in the original land use plans. The Planning Team provided detailed quantitative objectives in the FMP. Given the apparent importance of an integrated approach to deer management, which is highly dependent on forest management activities, we are recommending that wildlife management plans be prepared for the major deer wintering areas in Bancroft and Minden Forest.

## Recommendation #8

That MNR review the need for wildlife management plans for major deer wintering areas in the Bancroft Minden Forest and if necessary update those plans to provide an integrated approach to meeting FMP targets.

# Land Base Used in Setting Targets

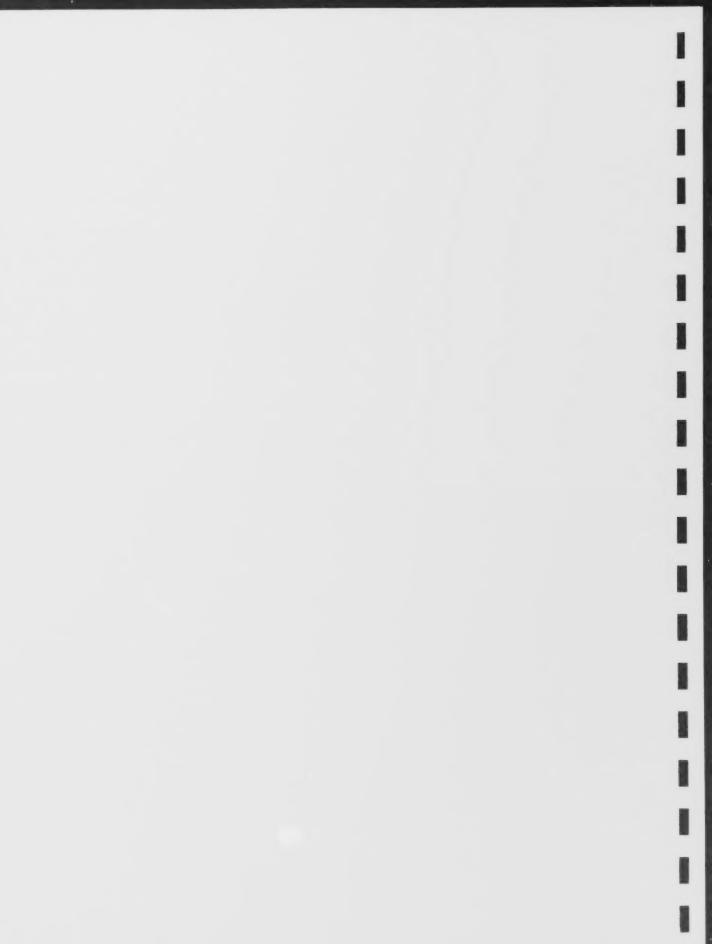
In the 2006 FMP, the projected future values for old growth area and for wildlife habitat areas are calculated so that they include the contributions of land in parks and protected areas in the Forest. This is a permitted approach with respect to old growth, since the MNR's Old Growth Policy<sup>7</sup> permits the use of park land and unmanaged Crown land in setting old growth objectives. The plan acknowledges this, but did not state that the same approach is taken for wildlife habitat.

The Audit Team has two concerns. The first is that ... FMP identifies management procedures for managed Crown land only, and does not contain measures to manage park lands<sup>8</sup>. Similarly, FMPs do not contemplate managing the "unmanaged" portion of the Crown landbase. Accordingly, it seems incongruous that the plan would include targets whose achievement depends on events on a landbase that is outside the scope of the plan.

Furthermore, the Audit Team feels that the lack of clear identification of the contribution of parks and protected areas to the attainment of the plan's ecological targets provides an unclear reflection of the contribution of forest management activities in achieving the objectives. We note that there are approximately 63,600 ha of forested park land in the Forest, compared with approximately 297,300 ha of managed forest land (according to Table FMP-1), so parks comprise a substantial proportion (almost 18%) of the total Crown land in the Forest. So it is highly likely that parks provide a substantial proportion

Ontario Ministry of Natural Resources. 2003. Old Growth Policy for Ontario's Crown Forests. Forest Policy Series. Volume 1. Queen's Printer for Ontario, Toronto.

<sup>&</sup>lt;sup>8</sup> Other than to respect park boundaries through the use of AOC prescriptions.



of the Forest's habitat for those species that prefer unmanaged forests. For example, is the fact that the FMP's habitat objective for barred owl (which prefers unmanaged forest) is predicted to be attained a reflection of management activities, or just that the parks provide good owl habitat?

The Audit Team believes that FMPs should identify the contribution of managed Crown land to ecological targets set on the basis of the entire Crown landbase, including parks, unmanaged and managed Crown land. This is important to provide a clear indication of the role and success of the managed lands in contributing to the ecological objectives of the forest.

The Audit Team recognizes that direction to include parks and protected lands in assessing attainment of plan targets is provided by corporate MNR. The audit therefore includes a recommendation to corporate MNR to advise planning teams to include targets for the managed land base as well as for the entire Crown land base. The Audit Team also suggests that this approach be taken for the 2011 Bancroft Minden FMP.

## Recommendation #9

That Corporate MNR develop and implement direction to planning teams to require that where the ecological targets in an FMP (including old growth and wildlife habitat) are developed for the entire Crown land base (i.e. including parks and protected areas), the contribution of the managed crown land base to those targets should be explicitly identified.

## Suggestion #8

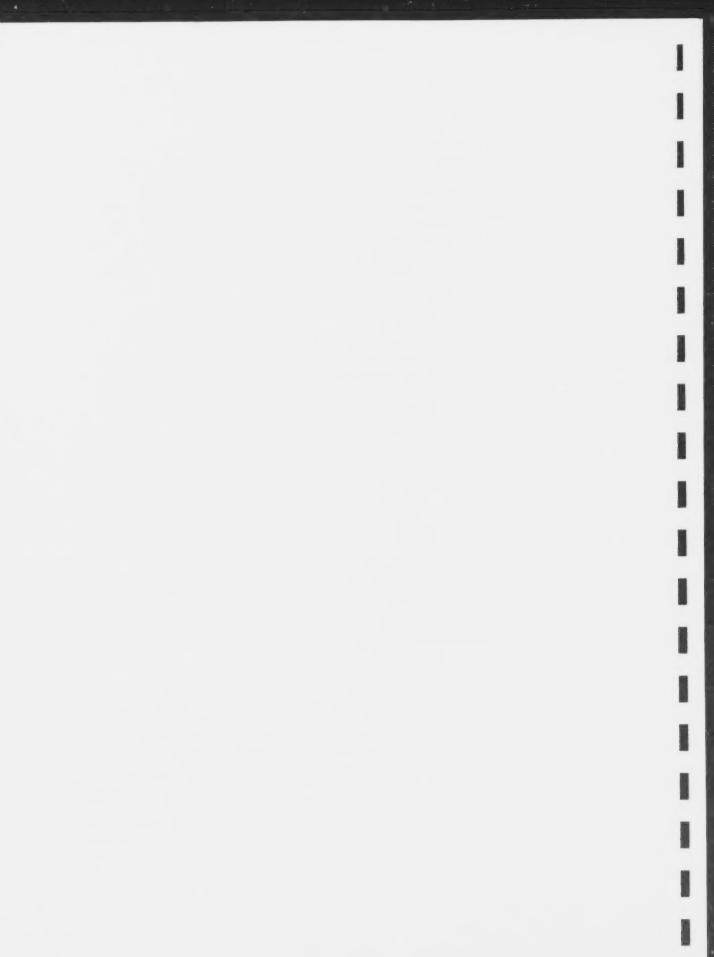
The Planning Team for the 2011 FMP should consider identifying the contribution of the managed Crown land portion of the Forest to ecological targets (including old growth and wildlife habitat) set on the basis of the entire Crown landbase (i.e. including parks and protected areas).

#### Access

Planned access infrastructure is one of the key elements of the direction given to auditors. There are three particular questions asked: 1) Are roads planned consistent with the FMP objectives?; 2) Are all roads planned required and do they support the development of the unit over time?; and 3) Is there adequate information available to plan roads?

For forest management activities, the responsibility to protect fish habitat is shared between the federal and provincial governments, through the federal Fisheries Act and Ontario's Crown Forest Sustainability Act (CFSA). Access is a primary concern and water crossings are the main sources of impact.

The identification of roads as an issue in the 2001 and 2006 plans by the planning team and the LCC is some indication of the importance of access issues in this part of Ontario. It is also an indication that the problem has lingered. MNR staff acknowledge that the current approach to roads and access management is *ad hoc*. The context for the issues



related to roads and water crossings has been discussed widely for a number of years. In response, MNR established a Provincial task team which prepared a report entitled "Forest Roads and Water Crossings Initiative: Findings and Recommendations pertaining to Liability Assessment, Determination of Responsibility and Planning Implications October 1, 2003". The results of that review are lengthy and will not be repeated here, except to say there are a number of tasks that are the responsibility of the MNR District and main office.

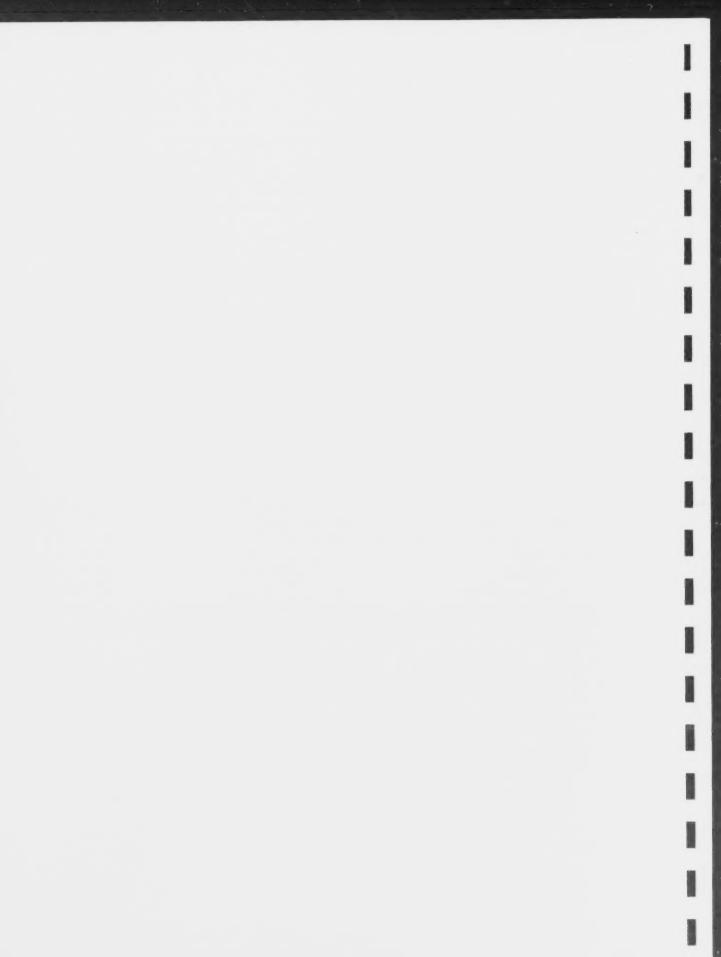
Bancroft MNR is progressing on these tasks, but has a considerable workload ahead. At the time of the audit the District had prepared a work schedule for developing a "Bancroft District Road Management Strategy". They were in Phase 1 - undertaking the inventory. Staff had been assigned and a timetable was in place. The district has a GIS layer that identifies roads, but the inventory exercise will be filling in the other critical information necessary for making consistent, strategic decisions on roads in the district. For each road or road network, this data includes: history; purpose; road condition (e.g., 4-wheel drive, single lane, all season); principal users; frequency of use; issues; status of water crossings; and use management strategy (MOUs, for bridges, maintenance; planned closure; access restrictions and/or permitted uses).

The resultant plan will clarify for which roads MNR will be responsible. This will help the District set workload priorities (instead of the current *ad hoc* approach) and minimize the District's liability risk and risk of being in violation of federal and provincial legislation. Current opinion by some that the Public Lands Act protects against public sector liability may be legally useful but this is not a solution to the management concern. Although the District strategy is under development, given the longstanding nature of the access issue, and the early state of MNR's response, we are recommending that the MNR place a high priority and adequate resources to complete its Road Management Strategy.

#### Recommendation # 10

That District MNR provide adequate resources and place a high priority on completing the Bancroft District Road Management Strategy.

Another serious access issue is the increasing use of off road vehicles, which is a broad change in forest use that is occurring in the absence of effective policy. We include one photograph (Figure 5) of an example of uncontrolled ATV use on the BMF. Damage to sensitive sites such as this wetland stems from the expansion of road networks and is a growing problem in North America. Some other concerns about ATV use include increased hunting pressure and harassment of wildlife, loss of remoteness, noise, litter, and assistance in the spread of invasive exotic species. Problems seem to be more prevalent on the Minden side of the unit, although Figure 5 was taken on the Bancroft side. The Bancroft District is a leader in developing non-regulatory approach to ATVs, and the Audit Team feels this is one of several areas where the District is providing leadership to MNR. However, at the same time the Ministry of Tourism has a campaign to publicize ATV opportunities in Ontario. Our concern was raised during discussion about the very limited regulatory framework that is available. The presence of the recommendation is an attempt on part of the Audit Team to call attention to this situation



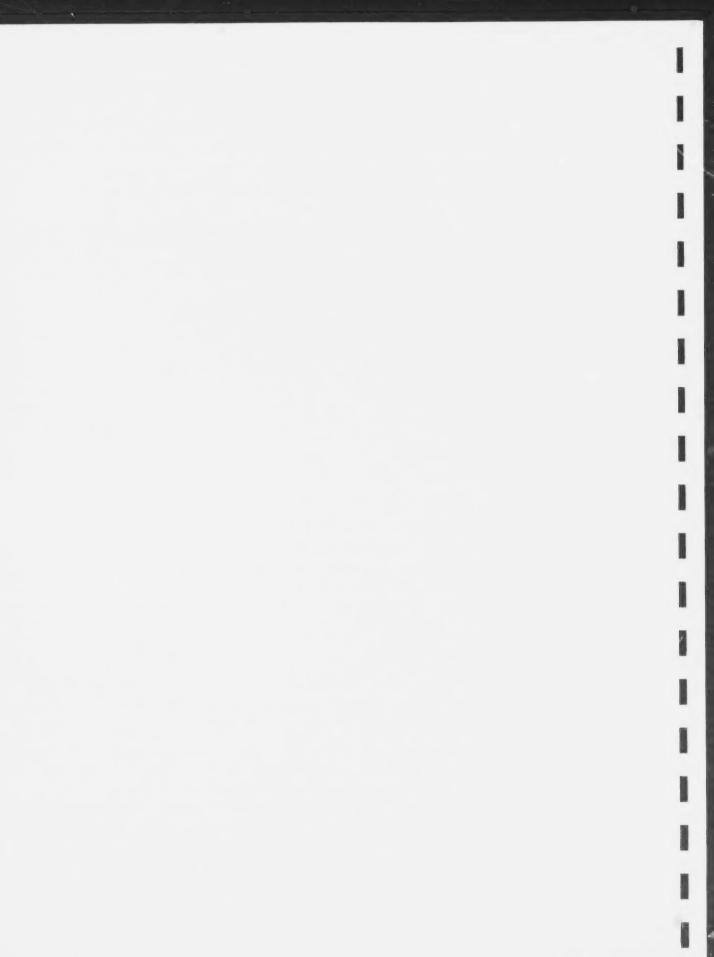
and, as stated in the recommendation, to continue to keep ahead of this fast growing recreational activity.



Figure 5. An example of wetland damage caused by ATVs.

The use of tertiary roads and other roads to access all parts of the forest means that the road use strategy discussed above will need to consider this use of roads as well. Considerable funding of enforcement will be required unless there is outreach to user groups and some form of self-compliance system through provincial or regional user groups, possibly following the model of the snowmobile clubs in Ontario.

Discussion with MNR staff indicated considerable effort is already being made to work with these groups, but there are few and ineffective tools for enforcement. The Public Lands Act was not designed with this type of wide ranging use in mind. MNR and Company encouragement of local groups such as the Haliburton Highlands Trails and Tours Network to become more organized and eventually become capable of outreach to users is an excellent approach. It is beyond the scope of this audit to explore possible solutions, but we can make it clear that there is a growing problem, ample evidence of increasing damage and inadequate resources.



### Recommendation # 11

That Corporate MNR, on a provincial scale, review its policy and legislation to ensure the wise use and management of Crown forest access roads and trails by the growing community of off-road vehicle users.

In the interim, it is recommended that Bancroft District MNR continue to work with off-road vehicle user-groups under existing policy and legislation to control and manage the use of Crown forest access roads and trails.

# 3.3.7 Operational Planning

In the 2001 FMP, the forest was administered as two working circles – Bancroft and Minden, but the 2006 FMP treats the forest as a single entity without working circle boundaries. Gradually, the distinctions between the two sides of the forest are fading and the forest is increasingly being managed as a single entity.

# Harvesting and Clearcutting

In the 2001 FMP, harvest allocations were within 3% of the Available Harvest Area (AHA), whereas in the 2006 FMP, allocations were within 6% of the AHA. The planning team was less well able to allocate area by age class in the same amounts as the SFMM result provided for. This is reflective of the difficulty in translating non-spatial SFMM results into a spatial harvest allocation. The 2006 FMP describes some of the forest units where this was more problematic, such as the intolerant hardwoods, where SFMM allocated 100% of the harvest in the 80-100 year age class but 52% of the planned harvest area was in the 60-80 year age class (although a large amount of this was 79 years old).

Clearcutting in the Forest was a major concern on the part of many LCC members, and was one of the issues identified in the bump-up request related to the 2006 FMP (See section 3.3.8). This has been a long-running issue during the development of the 2001 and 2006 FMPs; during the audit period, there were presentations and discussions at LCC meetings (e.g. May/June 2005) and visits to the forest by LCC members to review current and proposed clearcut operations. The following paragraphs provide an assessment of the scope and nature of clearcutting on the BMF, the rationale for the LCC's concerns, and a set of suggestions and recommendations intended to help the parties progress to a shared view of clearcutting. This section is not intended to influence the handling or assessment of the bump-up request; the Audit Team's attention to this matter is due to the importance of the issue during the audit period.

Although many forest types in the BMF are managed using uneven-aged management, or the shelterwood system, a number of forest units are managed using the clearcut system. These forest units were not changed from the 2001 FMP to the 2006 FMP, and are shown below in Table 7. The Broad Forest Type column lists the general provincial descriptor of the forest type of which the forest unit comprises, and the table also shows the main species and FU area in the available Crown managed landbase.



Table 7. Description of Forest Units Managed by Clearcutting.

Forest Unit	Broad Forest Type	Main Species	Available Crown Managed Area (ha)
CM1	Upland Conifer	Balsam Fir	7,803
INT1	Intolerant Hardwoods	Poplar	48,142
MW1	GLSL Mixedwood	Red Maple	9,875
PJ1	Upland Conifer	Jack Pine	328
PR2	GLSL Conifer	Red Pine	3,538
TOTAL			69,686

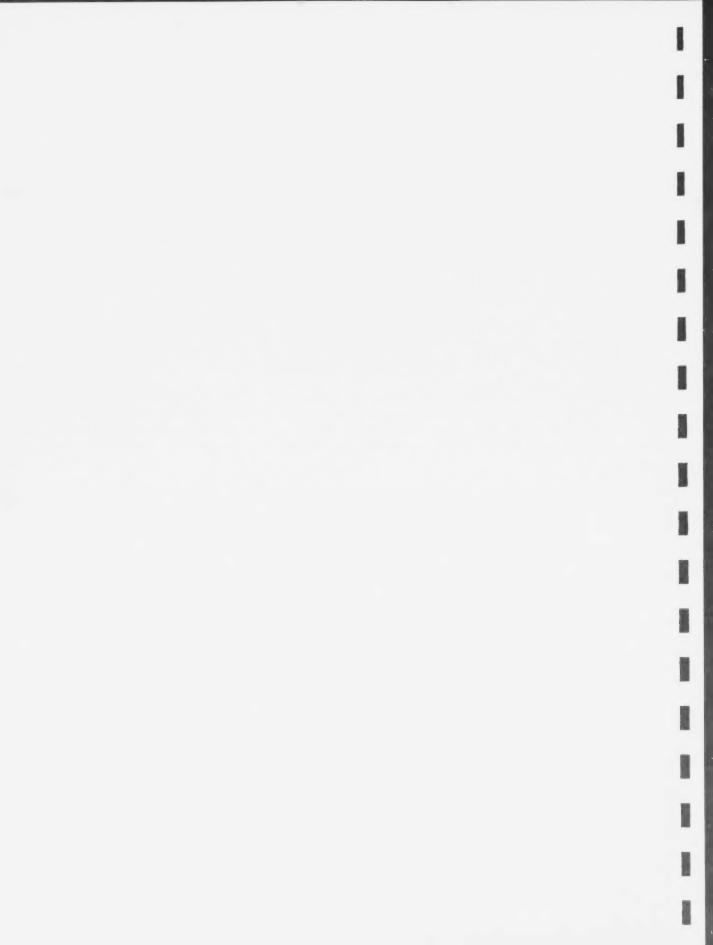
The total area which is available and being managed under the clearcut system is 69,686 ha, which is approximately 36% of the total available area in the managed Crcwn landbase. The 2001 FMP had a planned harvest of 4,923 ha in the CM1, INT1, and MW1 forest units over the five-year plan period. The planned area in these working groups was equivalent to 25% of the total planned harvest area. Of this, 4,425 ha, or 90% of the planned area, was actually harvested during the plan period.

Clearcut areas tend to be small in this management unit, compared to provincial norms. The average area of the clearcuts planned in the 2006 FMP term is 43 ha, and only the two largest clearcuts (311 ha and 356 ha) exceed the 260 ha threshold in the FMPM that requires them to be treated as exceptions. Detailed actual clearcut statistics are provided in the Annual Reports prepared under the 2004 FMPM – in the 2004/05 fiscal year, the only year for which a new version of an AR has been produced, a total of 16 clearcuts covering 472 ha were reported, with an average size of 29.5 ha and the largest at 124 ha. In summary, clearcuts are generally small and account for an important but not overwhelming proportion of the total harvest area.

One concern of many LCC members was the maximum allowable size of clearcuts on the BMF. The LCC, MNR and Company agreed to a maximum size of 260 ha for clearcuts in the 2001 FMP, and there is confusion as to whether this was followed in the 2001 FMP (as evidenced in the June 2005 LCC meeting minutes) and whether the maximum size limit was to apply to the 2006 FMP and/or to all future FMPs. The 2006 FMP notes that the Planning Team and LCC agreed to minimize "to the extent possible" the number of large (> 260 ha) planned clearcuts during the plan term.

The term "clearcut" has very negative connotations, and one of the LCC's concerns has been that people reading the FMP, Annual Reports, and other documents related to the Forest will see that clearcutting is taking place, and think of the large barren areas that constituted clearcuts in northern Ontario in the 1980's and before. As the LCC recognizes, there is a very great difference between cutting clear the harvest block (i.e. removing all tree cover on the block) and harvesting in a way that leaves large numbers of residual standing trees.

On the Audit Team's field inspection of the BMF, many of the areas that were described as clearcuts were sites where the upper canopy of poplar had been removed, leaving behind what had been a dense understorey, as high as 10 m or more, containing a wide



variety of species (See Figure 6). The stands left behind on these sites would be free-to-grow and aged between 20 and 40 years old. The Audit Team concurs with the LCC, as well as MNR and the Company, that clearcut is not the most appropriate term to describe the harvests that are taking place in these circumstances. In addition, these sites did not meet the definition of clearcut in the silvicultural manual. And this is without the application of the NDPEG, which requires additional standing live trees to be left. The most appropriate term in the Southern Ontario silvicultural guide is "selection thinning", which should be used for these situations.

#### Recommendation # 12

That the Company and District MNR, in non-selection and non-shelterwood forest units, designate as "selection thinning" the harvest of an overstorey that leaves the former understorey as a free-to-grow forest.

The types of stands just discussed could in some cases be managed by a two-stage removal of the overstorey, as some LCC members advocate, although the economic feasibility is uncertain and is likely-site dependent.

Given the strong views of some LCC members on this matter, which the Audit Team assumes are reflective of a sizeable cohort of the local population, the following suggestion is offered as an effort to gain more insight into the feasibility of the harvest approach advocated by the LCC.

# Suggestion #9

The Company, MNR, and LCC should consider implementing one or two experimental harvests laid out in a manner to test the practicality of multiple entries in clearcut forest types.

These experimental areas could serve as demonstration areas and it would be helpful if relevant harvest and economic data were tabulated and compared with data from clearcuts in comparable stands conducted as described in the 2006 FMP and Silvicultural Ground Rules (SGRs).

There are also some clearcut harvests, especially in the intolerant forest unit, where there is very little residual understorey, and the harvests are accurately described as "clearcuts with standards" (See Figure 7). Some of these sites will be converted to other species after the harvest. The most notable examples are areas that are better suited to white and red pine, but had poplar growing in off-site conditions<sup>10</sup>. The FMP directs the conversion of these sites to pine forest, and the LCC and the Audit Team agree with this direction.

<sup>&</sup>lt;sup>9</sup> Selection thinning is defined in the Southern Ontario Silvicultural Guide as "Removal of dominant trees to benefit trees in lower crown classes".

Sometimes, for reasons related to the timing and nature of disturbances, a tree species will become established as a stand on a site for which it is poorly suited. It will not grow well in such cases. In these circumstances, the species is said to be "off-site". In the BMF, in the late 19-th and early 20-th centuries, many pine sites were logged, burned and regenerated as poplar or other hardwoods, and these are the focus of conversion efforts in the FMP.

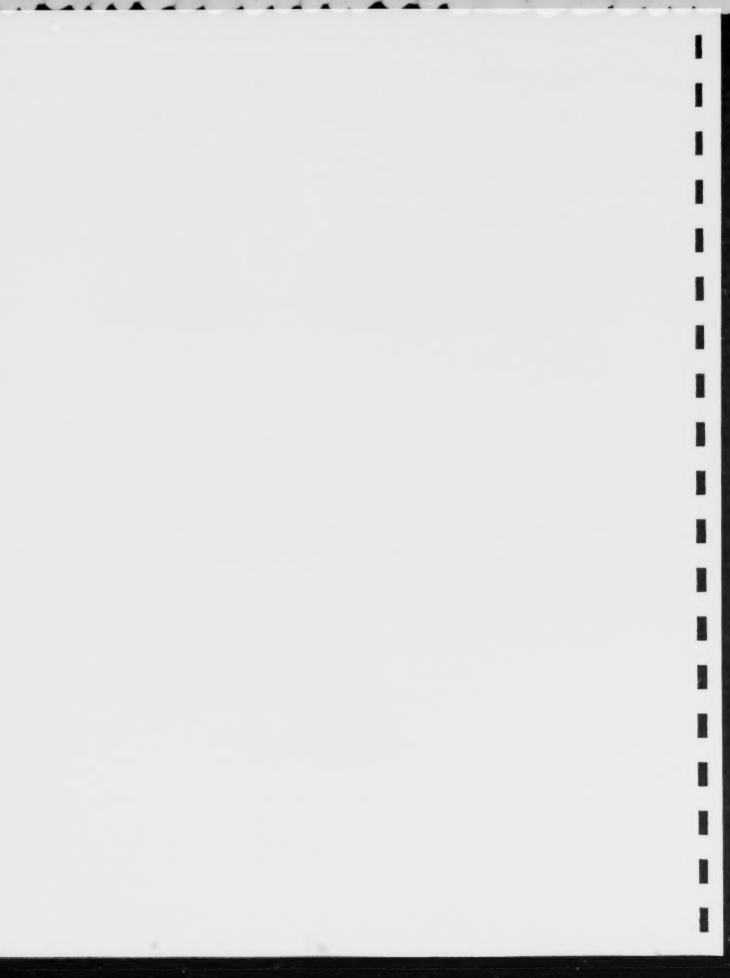




Figure 6. An example of a recent clearcut in the Bancroft Minden Forest.



Figure 7. An example of a recent clearcut with standards in the BMF.



This leaves clearcut poplar blocks where there is little understorey and where natural regeneration of poplar is the desired objective. LCC members have raised a number of concerns about clearcutting these stands; most of the concerns are ecological and some are socio-economic in nature. The Audit Team agrees with concerns raised by the Company, the MNR, and the LCC regarding the validity of the disturbance template associated with NDPEG in the BMF. The 2011 FMP is expected to be developed under the direction of a new guide – the Landscape Level Guide – which will incorporate and modify the requirements of NDPEG and other guides with landscape level direction. It is anticipated that allowance will be made for local social preferences in the description of how a planning team should determine an appropriate size frequency and spatial arrangement of disturbance areas.

We note that there were no management alternatives developed and tested, as part of the 2006 FMP development process, which drastically reduced clearcut incidence. This option was available to the planning team, and given the strong negative sentiment from some quarters towards clearcutting, it could have been an informative alternative to investigate. The 2004 FMPM has modified the plan development process so that the use of defined management alternatives has been replaced by a more unstructured "scoping" process, which is intended to examine alternate management approaches.

# Suggestion # 10

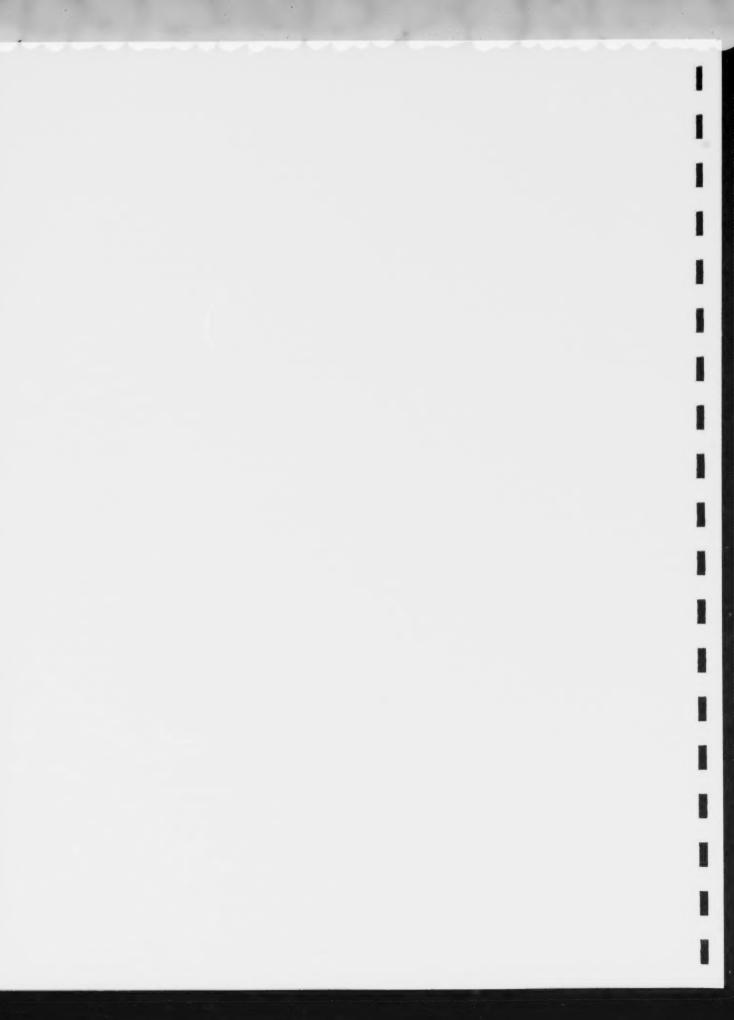
The 2011 FMP planning team should examine alternate approaches to clearcutting in the scoping analysis in the initial stages of planning.

The reader's attention is also drawn to Recommendation # 4 (have an LCC member on the planning team), which will further increase LCC participation in planning.

In summary, the Audit Team feels that there is validity to concerns about the appearance of some clearcuts, although such concerns are mitigated under NDPEG. The Audit Team agrees that there is a great deal of negative perception associated with clearcuts, but much of this is based on the historical behaviour of the forest industry (i.e., in the 1980's and earlier, well before the formation of the BMFC). Moreover, the Audit Team feels that the perspectives brought forward by some LCC members indicate that there is considerable opposition among the local public to clearcutting. The social appropriateness of applying the disturbance template to the Bancroft Minden Forest does seem to be questionable in these circumstances.

The Audit Team feels that it is not appropriate for it to attempt to arbitrate on what an appropriate role for clearcutting would be in the BMF. However, the Audit Team would like to see a shared view developed and feels that it would help the situation if there was additional information available regarding clearcut harvests on the BMF. Relevant information, that could be reported in the annual reports, would include such statistics as:

<sup>&</sup>lt;sup>11</sup> Fire return cycle times in the unmanaged forest were set for each forest unit, and generally ranged from 100 – 400 years. The SFMM analysis of the preferred management alternative used a fire return time of 1000 years under management – such figures are in general agreement with current scientific thinking.



- Actual number and size of clearcuts, and relation to overall harvest areas (as is already in the revised Annual Report format);
- The number and area of stand conversions following clearcutting (including initial FU, future FU),
- The number and area of clearcut harvests in plantations, and
- Comparison of the actual harvest area within a clearcut block and the total defined clearcut area (difference would be islands and peninsulas).

# Suggestion #11

The MNR, Company and LCC should jointly design an appropriate clearcut reporting template and the Company should follow this for the balance of the plan period.

# Suggestion # 12

The MNR, Company and LCC should consider appointing a mediator to define common ground and differences regarding clearcutting, and to provide a basis for developing a shared perspective on this issue.

#### Silviculture

Planned silvicultural operations are organized in a set of Silvicultural Ground Rules (SGRs), which are organized into Silvicultural Treatment Packages (STPs). There are 239 STPs identified in the 2001 FMP, and 253 in the 2006 FMP. Each STP is identified by Current Forest Unit, Silvicultural system, Site preparation method, Regeneration method, Tending treatment type, and Future Forest Unit. Each STP is a detailed silvicultural strategy developed to address a specific forest type and site condition. The STP/SGR package is complete and well done.

Areas selected for renewal and tending during the planning process were within the 20 year eligibility criteria as laid out in the FMP. The selection criteria proposed for the five year term are a logical progression from the 20 year criteria and their implementation was noted during the field visit. No silvicultural exceptions were in place during the audit period.

Some of the stands identified for renewal and tending (outside of stands harvested during the term of the plan and/or requiring the regular renewal and maintenance immediately following depletion) were treated using the Forestry Futures Trust Fund. A good example of this was the Yellow Birch spacing project situated along Hwy 118 directly adjacent to the French Severn Forest in Hindon Township.

The relatively low levels of planned intensive silviculture (i.e. less than 150 ha. of mechanical site preparation annually, approximately 100 ha. of chemical site preparation annually, and less than 300,000 seedlings to be planted annually) follows the low levels of past depletions requiring intensive follow-up.

### Access

In the Bancroft Minden Forest, primary and secondary roads in most cases exist in the form of Provincial highways, municipal roads and forest access roads. There was no new planned construction of primary or secondary forest roads in the term, and only one road was upgraded for forestry. The planning documentation was complete in the FMP supplementary documentation.

On the other hand, tertiary roads were a major discussion point with the LCC in both the 2001 and 2006 plans. The first reference to tertiary roads in the 2001 plan is with regard to protection of other values, wood turtles in particular, and this sets the theme for much additional discussion. MNR, cognizant of the ever-increasing pressure from other forest users, has policy in place to keep areas remote and endeavours to maintain some form of access restriction when possible. Removal of water crossing structures is one of the key tools in this regard. Some text from the 2001 plan, from a proposal by one interest to maintain a much larger road network, illustrates the conflicting values:

"...A maintained road system would reduce the probability of other resource users performing substandard water crossing repairs, grading or vegetation control. Most of these roads are going to be used by all terrain vehicles, snowmobiles or four-wheel drive vehicles whether they are maintained or not. In other words, the best option for these roads is to maintain them."

The plan fairly presents the other side of the debate:

"There was opposition to the proposal from some planning team members, local citizen's committee members, and the general public. This opposition is consistent with the direction of previous plans, strategies selected within this plan, and the desire of many to reduce access to the forest. Reducing the number of roads and roads, which are easily traveled by highway vehicles, reduces the pressure on fish and wildlife populations. It provides an opportunity for remote outdoor recreation experiences. Abandoning roads by removing water crossings and permitting the ingrowth of vegetation reduces traffic and in some instances with time can eliminate traffic. Proper abandonment reduces the damage caused to drainage systems by off-road vehicles."

In the end a compromise was reached. The planning team for the 2001 plan embedded more than 20 specific requirements for tertiary road construction into the plan text, thus enabling better compliance and enforcement. Abandonment is encouraged, and, as part of the fish and wildlife objective in the 2001 plan, tertiary roads must comply with an approved abandonment strategy set at the AWS stage. The clear direction about abandonment, consistent with the definition of tertiary roads, is a confirmation of the pressure to close many of these roads.

In the 2006 FMP process, the focus on roads continued with the development, in April 2005, of the "Protocol for the Review of Water Crossings Proposed Through the Forest Management Planning Process."

ı ı ı I In the planning team discussions, there was comment about the struggle to get water crossing structures removed, although there are numerous examples of water crossing structures on tertiary roads and skid trails that are routinely removed as harvest and silviculture is completed. On balance, the struggle between roads and roadless area will continue as population and attendant use pressures increases. The planning team and LCC provide a balanced, although not always comfortable, working group for addressing this challenging question.

# Values Information

Values information is the mapped information about important biological, social and economic features, many of which are identified in the suite of forest management guidelines. The Forest Information Manual<sup>12</sup> acknowledges MNR's responsibility to ensure that information about these non-timber values is collected in accordance with the standards described in Section 4.2 and that priority is given to those values that are affected by proposed and optional areas of forest operations for the term of a forest management plan that is under preparation." (FIM p. 37), and "The MNR is responsible for confirming the presence of non-timber values, and ensuring that information about non-timber values is collected and confirmed. The MNR must ensure that information about non-timber values, which is provided to planning teams, is sufficient to determine road locations and develop AOC prescriptions" (FIM p. 47).

MNR provides planning support and support for guidelines implementation and has excellent expertise available. Nevertheless, MNR resource limitations constrain its ability to fulfill its values management responsibilities in an effective and timely manner.

MNR records the values information through its Natural Resource Values Information System (NRVIS). Company staff reported that baseline NRVIS information provides a workable database for use in both FMP and Annual Work Schedule Planning. NRVIS data are supplemented with information which is collected by the Company in the course of forest operations. There has been a recent revision of the process of values updates for AWS revisions that is referred to as the ledger system. In effect the Company informs MNR of changes to values, particularly water related features such as unrecorded streams. This is done by simply forwarding the information to MNR and the Company keeps a record. The procedure is effective in reducing the paper burden related to revisions. Both the Company and MNR feel the system needs to have the loop closed by an official acknowledgement that MNR has received and approved the values update. We recommend this action be taken to formalize the procedure.

### Recommendation # 13

That MNR and the Company work out the procedure for acknowledging values updates which are submitted through the ledger system to ensure the Company receives acknowledgment that the information has been received and approved.

<sup>&</sup>lt;sup>12</sup> Ontario Ministry of Natural Resources. 2001. Forest Information Manual. Queen's Printer for Ontario.



The 2006 FMP describes the values information for the Forest as being of "variable quality and currency". The plan specifically identifies that the lack of information on the thermal regime of the majority of lakes and streams causes management of the forest to be compromised in a couple of ways. The FMP wisely employs a precautionary principle in instances where the thermal regime of a waterbody is not known. In the use of the precautionary approach, waterbodies with unknown thermal regimes are afforded the protection associated with the cold water bodies, so they have a reserve applied in situations where one is not required for warmwater bodies. Use of the precautionary approach eliminates the possibility of harvesting near to the shore of these lakes, rivers, and streams. Not only does this prohibition cost the Company harvesting opportunities, it impacts the development of deciduous habitats close to shore. Lack of cutting close to shore frequently results in "doughnuts" around waterbodies that are largely coniferous because deciduous species have died out due to the lack of disturbance. The lack of deciduous species provides poor habitat for aquatic mammals, especially beaver, and therefore also limits trapping opportunities (a concern raised by the LCC). Furthermore, opportunities to work in-stream (for crossing construction) are curtailed for streams whose status is not known. This situation causes scheduling and logistic difficulties for the Company's road and crossing construction activities.

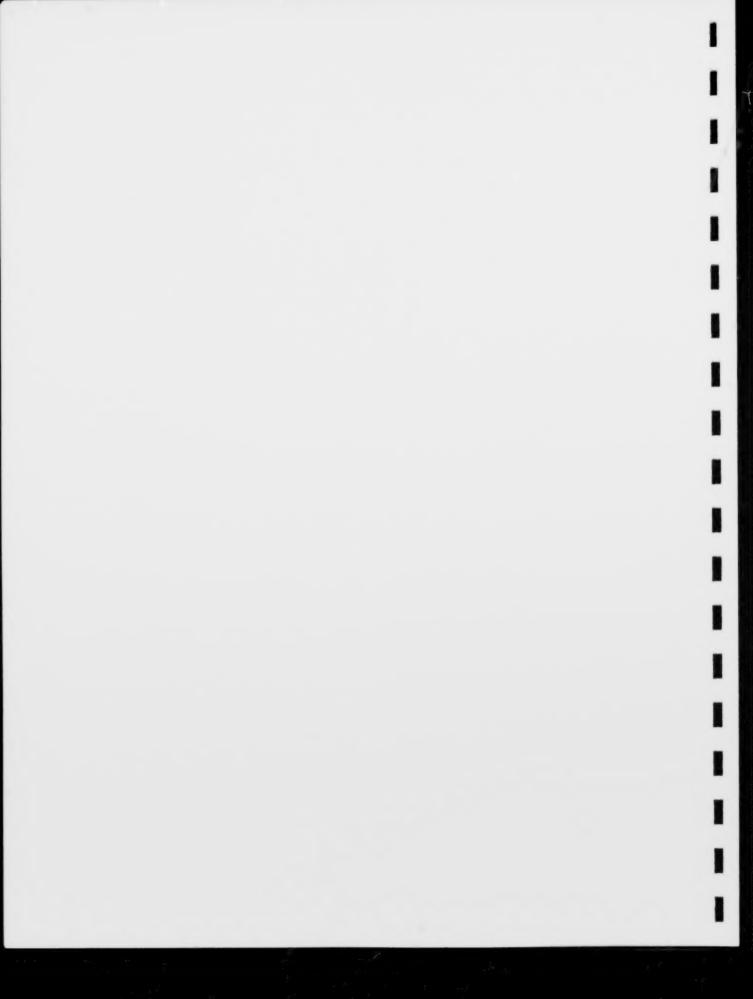
MNR staff have worked on developing a water body classification protocol, but little has been undertaken in this regard in recent years. This audit is not questioning the use of the precautionary approach, or the activities of the MNR District staff. The impediment in providing better water body classification information is financial resources.

This issue has come up in many Independent Forest Audits, and many recommendations directing corporate MNR to adequately fund water body data collection have been made. The recommendation is made here again in hopes that continued focus on the topic will contribute to its resolution.

### Recommendation # 14

That Corporate MNR adequately fund values information collection, focusing on information to characterize water body thermal regime.

During the audit, several people noted that there is an opportunity to coordinate values surveys and collection in a more tactical way. For example, there is a discrepancy between District Offices in central Ontario in their identification and approach to conservation of raptor nests. Operators and others specifically mentioned stick nest identification as being done differently in adjacent units, causing some confusion about the application of the guide. This is not to say any District's approach is incorrect; but from the operators' perspective, it is confusing and uncoordinated. Although there is not a risk to the species, the approach is not consistent, and a source of criticism from operators. Other improvements that could be gained from regional coordination include water values such as water crossing techniques suitable for fish bearing streams, and stream thermal layer information. This is put forward as the following suggestion:



# Suggestion # 13

MNR Region should coordinate operational approaches to values protection to provide more consistent and possibly more economical implementation of plan requirements.

The Audit Team notes that a recommendation to "implement a comprehensive system for storage and retrieval of wildlife resource inventory and values information at the Minden office" was put forward in the last audit. This appears to have been related to technical constraints; during the current audit period, the performance of the system met the requirements of the Company and the MNR.

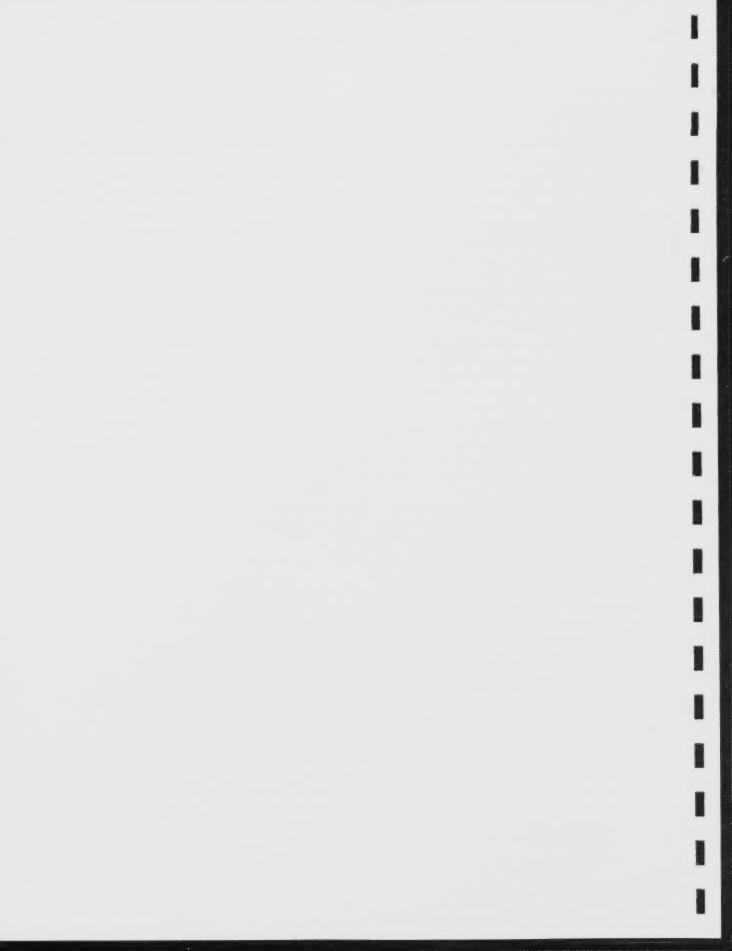
## AOCs.

The district has a relatively small number of AOC prescriptions, 23, to cover the various requirements. The prescriptions are used appropriately and follow the approved MNR guides. The planning team, with review and recommendations from the LCC and MNR Regional advisors, developed the AOC prescriptions. The 2001 FMP served as a framework for the new plan's AOC prescriptions. Revisions to the 2001 plan's prescriptions were made where new information was available, such as for draft directives for American Ginseng and Wood Turtle. Inclusion of AOC prescriptions in the FMP provides clarity in planning for AOC's, helping to maintain values and avoid environmental problems. Inclusion in the FMP also provides the ability to enforce the prescriptions through compliance monitoring. Enforcement has been a challenge in the past, in many plans in Ontario. The planning team has been diligent in ensuring that the AOC requirements are captured in the plan.

To safeguard certain values, known as classified values or 'CV', the 2006 FMP uses a precautionary labelling system to refer to a unique AOC prescription. Classified values will not be identified on the operations map due to their sensitivity, except by the reserve and modified zones. This approach improves on what was done in the 2001 plan.

Plan maps provided to loggers included labelled AOC prescriptions, although the maps for audit field visits did not include AOC labels. Label use meets the requirements of this indicator. We considered making a suggestion about making AOC labelling of maps more routine or even automated during map production, however the Company was well aware of its importance. They are now aware that this is also important during audits.

The planning team has shown appropriate flexibility in the design and application of AOCs. One example, that was raised several times during the audit, was the conflict between the AOC for riparian and fish habitat protection and the AOC allowing for some shoreline disturbance for beaver. Some areas where there are abandoned beaver marshes may actually benefit from more intensive harvesting to the water's edge (i.e. Ducks Unlimited beaver pond management). The Audit Team flew over several examples of this. In fact the "footprint" of these incursions onto the shoreline is very small and well within natural disturbance parameters indicating a cautious approach. Larger openings would not likely compromise the fish habitat objective. In summary, the planning team, consistent with higher level guidance, had appropriately, if cautiously, implemented this



prescription. It is a good example of AOC prescriptions reflecting the specific site conditions.

Alternative AOC prescriptions are being actively evaluated in the District. One such value is the Wood Turtle. The wood turtle, listed as Endangered (not regulated) by OMNR and as Special Concern by COSEWIC<sup>13</sup>, is known to be present and nesting in the BMF area. Some logging in wood turtle habitat in winter can be beneficial by creating openings but road building, which allows access to collectors and increases road kill, is a concern. The district staff are participating in the resolution of the Wood Turtle guidelines, which are still in development. The buffer and other restrictions assigned to wood turtle appear precautionary and it is apparent that conservation is the sole objective in those areas.

There were no exceptions related to AOCs in either the 2001 or 2006 plans. The lack of exceptions could be interpreted as a lack of testing new approaches to management, however, as described, the Wood Turtle guide is under development and monitoring in the District, and there is no conceptual resistance to monitoring of AOCs.

# 3.3.8 Plan Review and Approval

The schedule for the production of the 2006 FMP was identified in the planning team TOR as required. Table 8 shows that the schedule was not adhered to exactly. Some key initial steps in plan development (identification of objectives and development of AOC prescriptions) took longer than expected and the schedule never got back on track completely. Towards the end of the planning period the later-than-scheduled steps had some implications for the commencement of operations under the new plan.

The new plan was approved by MNR in mid-February 2006, about a month later than planned. Following plan approval there is a 30-day public inspection period during which concerned parties can "bump-up" the plan (i.e. make a request to the Ministry of the Environment (MOE) for an environmental assessment of the plan). If the plan is bumped-up, there is a 45-day period during which MOE is supposed to render a decision on whether or not planned operations can proceed. If a plan is approved as scheduled in mid-January, then operations may commence on April 1, even if there is a bump-up request (assuming that MOE adheres to the schedule for rendering a decision on the bump-up request, and that the decision does not affect the start-up date). For the 2006 plan, there was a bump-up request originating from an LCC member. Because the FMP was approved later than planned, the bump-up period did not end until late March, 2006. Therefore, it became necessary to work within contingency measures permitted under Ontario's regulations for operations to occur. On April 7, 2006 the MNR Regional office requested the MOE's concurrence for operations in the Forest to take place until the MOE renders a decision on the bump-up request. On April 21, the MOE provided the concurrence.

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<sup>&</sup>lt;sup>13</sup> Committee on the Status of Endangered Wildlife in Canada.



No operations took place on the Forest between March 31 2006 (the date of expiry of the 2001 FMP) and April 22.

The Audit Team was told that work on the AWS slowed somewhat as the Company waited to see the results of MOE's concurrence decision. This contributed to a late delivery of the 2006 AWS, which was not approved until June 1, 2006. In order for operations to take place in the period April 22 -June 1, 2006 (i.e. after MOE concurrence and before AWS approval), exemption orders were provided by the Minister of Natural Resources. Exemption orders allow operations to proceed in the absence of approved plans, and are allowed under the CFSA. They are used in relatively rare circumstances, where approval of planning documents (i.e. Annual Work Schedules) seems imminent, and where the scheduled operations are not contentious. Three exemption orders were provided by the MNR to allow road work, stand improvement, and tree planting operations to occur.

Table 8. Comparison of planned and actual schedules for the public consultation components of the development of the 2006 FMP.

Event	Planned Date(s)	Actual Date(s)	
Assembly of Background info	Dec/03	Dec./03	
Invit. To Participate	May 1, 04	May 13, 14/04	
First Information Centre			
Notice of Inf. Centres	Sept.1 /04	Oct. 28/04	
First Inf. Centre	Oct.1 /04	Nov. 26/04	
Response from Inf. Centres	Dec. 1/04	Jan. 25/04	
Second Information Centre			
Notice of Inf. Centre	Jan. 30/05	Mar. 3/05	
Second Inf. Centre	Mar. 1/05	Mar. 23/05	
Response from Inf. Centre	May 1/05	May 24/05	
Draft Plan to MNR	July 1/05	July 13/05	
MNR review	Sept. 1/05	Sept. 12/05	
Draft Plan Review			
Notice of draft plan review	Aug. 1/05	Aug. 11/05	
Public Review of DP and prelim. List of required alts	Sept. 1 to Nov. 1/05	Sept. 12 to Nov. 11/05	
Public response on DP due	Nov. 1/05	Nov. 11/05	
Final List of required alts	Nov. 15/05	Nov. 30/05	
Submission of revised plan for MNR review	Dec. 15/05	Jan. 18/06	
MNR review of revised plan	Jan. 15/06	Feb. 14/06	
Plan Inspection			
MNR approval	Jan. 15/06	Feb. 13/06	
Notice of Plan Inspection	Jan. 15/06	Feb. 23/06	
30 day public Inspection	Jan. 15 to Feb 15/06	Feb. 23 to March 23/06	
Last opportunity for bump-up	Feb. 15/06	Mar. 23/06	
MOE decision on bump up	Mar. 31/06	Pending	
Operations commence	April 1/06	April 22/06	



Although these latter events occurred outside the window of this audit, they are recounted here because the events which set them in motion occurred during the audit period. In sum, the Company and the Ministry dealt well and appropriately with the circumstances requiring contingency measures to be implemented because of the late approval of the plan and the bump-up request.

The only transgression which occurred during the planning and review processes was a relatively minor one involving public consultation. The public notice for the 2<sup>nd</sup> Information Centre was issued on March 3, 2005, only 20 days prior to the event. FMP requirements are for 30 days notice to be given. As this was an isolated event, the Audit Team does not believe a recommendation is necessary.

### 3.3.9 Plan Amendments

During the five-year audit period there were approximately 120 amendments to the 2001 FMP. This is a relatively high number compared with other FMPs. However, investigation into the reasons for the amendments shows that no systemic issues account for their high frequency. Almost half of the amendments (59) related to adding values into the inventory and implementing associated AOC prescriptions, and 52 were associated with adding or removing harvest area. The remaining amendments were related to several other usually routine aspects of management, which from time-to-time require modifications to a FMP. Up until 2004 it was necessary to process a plan amendment to add values records into an FMP and implement an existing AOC prescription in a new area. However, an amendment is no longer required under the 2004 FMPM, and so it is likely that the number of amendments associated with AOCs will decline markedly in the next FMP period.

Most of the amendments related to adding or removing harvest area can be explained by examining the inventory and old harvest records used in harvest planning. Previous harvest maps (i.e. those created prior to BMFC assuming management of the Forest) were often created by recording harvest blocks drawn in free-hand on inventory maps. Harvest blocks often had inaccuracies in their drawn perimeters, and there were also often errors in the stand boundaries and descriptions in the inventory (Figure 8). Therefore, the spatial information used to plan harvest allocations was often laden with inaccuracies and "slivers" of stands. When pre-harvest inspections were done, it was often found that the situation on the ground, in terms of stand boundaries, and the boundaries of previous harvest blocks, did not reflect the inventory used to lay out the block.

This led to many situations in which minor changes in harvest block boundaries were required to bring the planned block into conformity with field conditions. In most instances harvest additions were less than 20 ha. This situation is expected to improve considerably with the new inventory, expected in several years, and with the continuing integration of record management into the responsibilities of the BMFC.



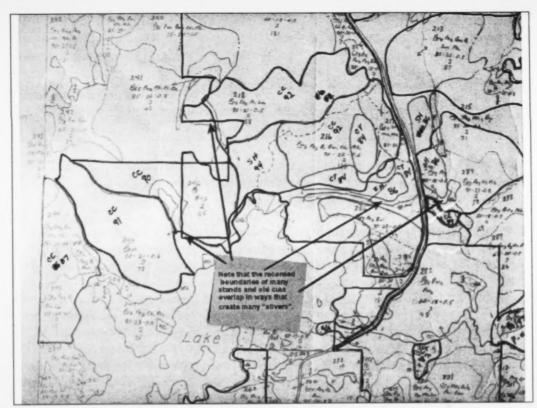


Figure 8. A section of a map used by BMFC in harvesting planning. The map shows the overlay of the forest inventory and previous harvest records. Note the many overlapping polygons showing records of previous harvests in several years.

To ensure that the harvest additions did not cause the harvest levels to exceed the AHA for any forest unit, a ledger was kept recording the added and deleted harvest areas. Both the MNR and Company believed that the approach used to manage amendments for changes in harvest area worked well. The Audit Team concurs that the approach seems appropriate given the difficult spatial data with which the Company is forced to work.

Three of the amendments processed over the audit period were categorized as minor, all the others were categorized as administrative. Two of the minor amendments related to adding harvest area, and the third involved delaying planned bridge removal. Based on our review, the Audit Team believes the categorization of amendments was appropriate.

The FMPM notes that "the decision on amendment requests, and the appropriate category of amendment, will normally be made within 15 days of receipt of the request." The average time between submission and approval for the amendment requests submitted during the audit period was 23.5 days and the median length of time was 19 days – indicating that the time for approval was greater than the FMPM. Several of the amendment requests took longer than 50 days to process; several others were processed in less than 7 days. Those with short approval intervals were, logically, those which had



some urgency associated with the request. The Audit Team notes that there is room for improvement in the MNR's turnaround times for amendment requests; this is addressed in Recommendation # 15.

#### Recommendation # 15

That the MNR normally provide a decision regarding amendment requests within 15 days, as identified in the FMPM.

The Audit Team observes that in the case of minor amendments, the FMPM identifies that the amendment is to receive MNR approval, but then must be advertised as being available for public inspection for a minimum of 15 days. If no comments are received that cause the District Manager to reconsider the amendment, then final MNR approval is given and the amendment can be implemented. Thus, for minor amendments, even if the initial request is approved within 15 days, the amendment cannot be implemented until final approval is given. This whole process will necessarily take more than 15 days.

In our review of the Company's amendment records, we found that quite a few records were incomplete. The most common flaw was that the approval page/form was missing. Other omissions were that the MNR District Manager's signature was missing from the approval form on record, and that the chain of correspondence (between the Company and MNR) appeared to be incomplete. Recommendation # 17 is directed towards several areas of the Company's record-keeping, including amendments.

The FMPM requires that copies of amendments be forwarded to all locations where the approved FMP is stored (i.e. MNR Offices in Toronto, Sault Ste. Marie, and Peterborough, and the MOE Regional office in Kingston). MNR staff forwarded amendment copies to all these locations as required.

# 3.3.10 Contingency Plans

The IFAPP does not require audits which examine a five-year period that overlaps exactly with an FMP term, as this one does, to examine the preparation of the FMP (in this case, the 2001 FMP), but it is required of the audit to examine the process of development of any contingency plan (CP) which was required for the previous FMP. As there was a CP developed in 2001, this audit examined the processes involved in its development.

The production of the 2001 FMP was delayed due to inventory problems at the start of the planning process and this led to the entire schedule being offset. The draft plan was submitted to the MNR on Jan. 15, 2001, approximately 6 months late. In February 2001 the Company prepared a CP proposal which requested the CP be amalgamated with the AWS for the year. The CP/AWS did not contain any operations other than those which were included in the Draft Plan and that were reviewed by the public at the two Information Centres that preceded development of the CP proposal. The CP did not include any contentious operations or clearcuts larger than 260 ha. The proposal was approved and the CP/AWS came into effect on June 15, 2001. For the period April 1,



2001 to June 15, 2001, silvicultural operations were permitted to proceed under CFSA exemption orders such as those used in 2006 (as discussed in Section 3.3.8). Company staff worked closely with MNR Regional staff in employing the CP process and guiding the CP through its implementation.

As outlined in the CP proposal, the CP/AWS was to be in force until Sept. 30, 2001 as it was anticipated that the FMP would be approved and ready for implementation by then. However, delays in the plan approval process required the extension of the CP/AWS to Dec. 25, 2001. This was achieved by a proposal to extend the CP/AWS submitted in early Sept. 2001. Therefore, the entire plan development process was offset by almost 9 months. Company staff attribute the longer-than-expected approval of the FMP to the fact that the Company and MNR were dealing with a great many required alterations and to the relative inexperience of the Company and local MNR in dealing with such circumstances as they had not guided a plan through such a process before.

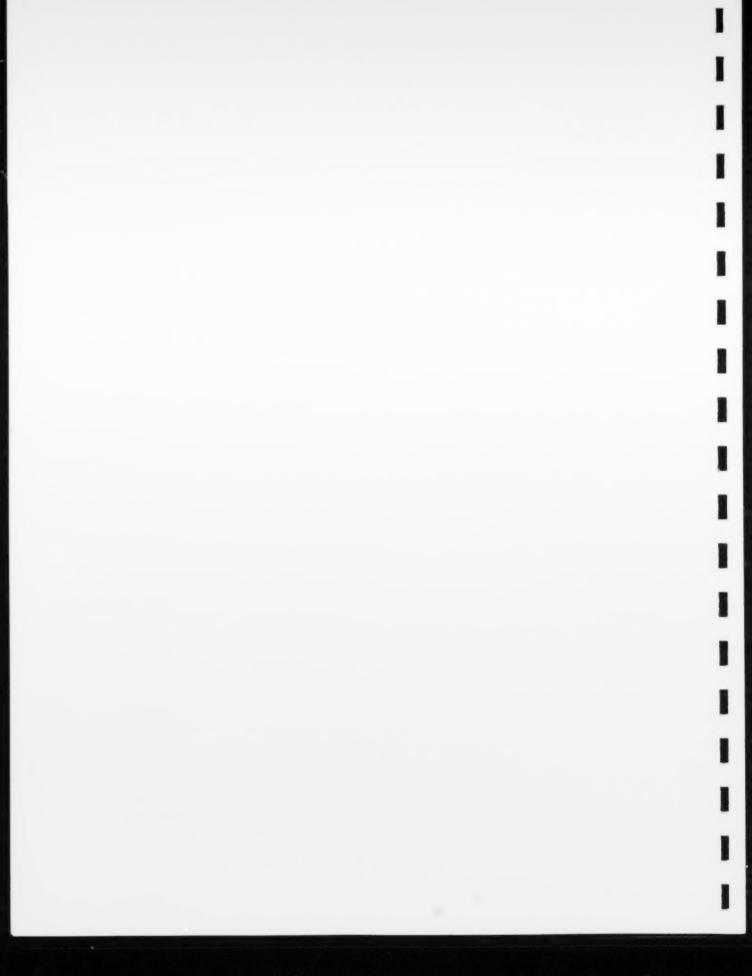
Obviously, it is less than desirable to have to use the contingency planning provisions of the FMPM. The time and effort involved in shepherding plans and proposals through the process eats into the time available for other aspects of planning and forest management. However, the provisions exist to provide a mechanism for forest management to continue in a sustainable manner should circumstance occur which delay or complicate the normal planning process. The Audit Team is satisfied that processes were used appropriately.

#### 3.3.11 Annual Work Schedules

The Annual Work Schedules were found to be consistent with the FMP, and were generally submitted on time, although there were some delays associated with the 2001 AWS (which was also a contingency plan) due to the delay in FMP development (see section 3.3.10).

According to the AWS revision ledgers, there were a total of 89 revisions during the five-year term of the FMP which is coincident with the term of the audit. Specifically, there were 15, 20, 19, 19, and 16, respectively, over the five years. A significant number were caused by changes to operational prescriptions for AOC values and water crossings (unmapped and incorrectly mapped streams or changes to crossing locations or conditions). As discussed earlier, changes to the procedures for updating values has allowed the Company staff to record changes and submit the record of change to MNR without a revision. Recommendation # 13 is intended to formalize that procedure (see 3.3.6).

There are still a fair number of revisions, given the size of this forest, due to altered boundaries for harvest and access reasons. Better pre-planning can always reduce this. More awareness of the area allows for fewer revisions later. The Audit Team discussed this issue and looked at some revisions that had an *ad hoc* appearance to them – an old block with some additional wood, adjacent to a new block, is discovered after the fact for example. Increasing the size of the block improves economics. We were not able to come up with a substantive recommendation on how to address this problem, nor a clear explanation or theme behind the revisions. On balance, the revisions may be a result of



small block size and small operations, which are economically challenging at times, simply requiring fine tuning before operations commence.

### 3.4 PLAN IMPLEMENTATION

#### 3.4.1 Areas of Concern

The IFAPP directs auditors to examine whether AOC protection measures were implemented as in the approved prescriptions, and that the prescriptions were suited to the specific site conditions.

The Audit Team examined 48 AOC prescriptions in the field, 42 by helicopter and 6 by truck; documentation of another 28 was examined. By far the most common type of AOC viewed (and present on the Forest) was cold water fish habitat buffers, which totaled 21 by helicopter and 6 by truck. A total of six AOCs related to warm water fish habitat modified harvest areas were viewed. In addition, 8 water crossing removals, or planned removals, were examined by helicopter, and we looked at AOCs related to: deer yards, recreational trails, patent land buffers, hunt camp buffers, provincially significant wetlands, a growth and yield plot, a Land Use Permit, and a skyline viewscape reserve.

Prescriptions follow the appropriate buffer requirements, timing restrictions and other requirements. Tertiary roads in some cases pass through buffers. In one example, an active hawk nest was discovered after operations began, halting operations. MNR staff had a dilemma because the operational road passed within the restricted zone. Local staff sought additional expertise and resolved the problem in a timely manner. Although the prescription was not strictly followed, an amendment was allowed and processed by MNR. The interpretation of the guide was appropriate. In another problematic example, the LCC identified apparent activity in a riparian area. On examination by the Audit Team, the Company explained that this route was chosen because an old road already existed. Some disturbance of the roadbed occurred during operations, causing the LCC to ask questions. The Audit Team agreed that the section of the road near the shoreline was sloppy, but the Company had placed haybales on the road edge to prevent sediment from the road moving into the shore area. Neither of the incidents seem to be systemic in nature, and the Audit Team did not make a recommendation.

The small number of prescriptions in the FMP (23) suggests there could be a generic approach to AOC's. Rather, we found that the prescriptions allow for flexibility depending on site and value. One example, that was raised several times during the audit, was the conflict between the AOC for riparian and fish habitat protection and the AOC for some shoreline disturbance for beaver. Some areas where there are abandoned beaver marshes may actually benefit from more intensive harvesting to the waters edge (i.e. Ducks Unlimited beaver pond management). The Audit Team flew over several examples of this. In fact the "footprint" of these incursions onto the shoreline is very small and well within natural disturbance parameters indicating a cautious approach. Larger openings would not likely compromise the fish habitat objective. In summary, the planning team, consistent with higher-level guidance, had appropriately, if cautiously,



implemented this prescription. It is a good example of AOC prescriptions reflecting the specific site conditions.

Reviewing the maps and photos during our examination of the field inspection sites, it was noteworthy how many AOC coldwater buffers are assigned adjacent to water systems that have not been "officially" assessed but which do not have cold water characteristics. This was discussed in the values section and Recommendation # 13 was made to improve values information. The Company provided estimates of the area of production forest placed in reserves. In this forest, where the selection system is a very viable option, and has a relatively low impact on water bodies, it does add to the argument that a one-time survey of water thermal regimes in the area would allow for an increased harvest with relatively low impacts.

### 3.4.2 Harvest

The forests in Bancroft Minden are complex because of the combination of past history of logging and other human activities, variable topography and site conditions, ownership, and the relatively wide range of species present. The shortcomings of the FRI, described above in section 3.3.5, further complicate forest management, leading to numerous plan amendments and AWS revisions, as described above in 3.3.9 and 3.3.11, respectively.

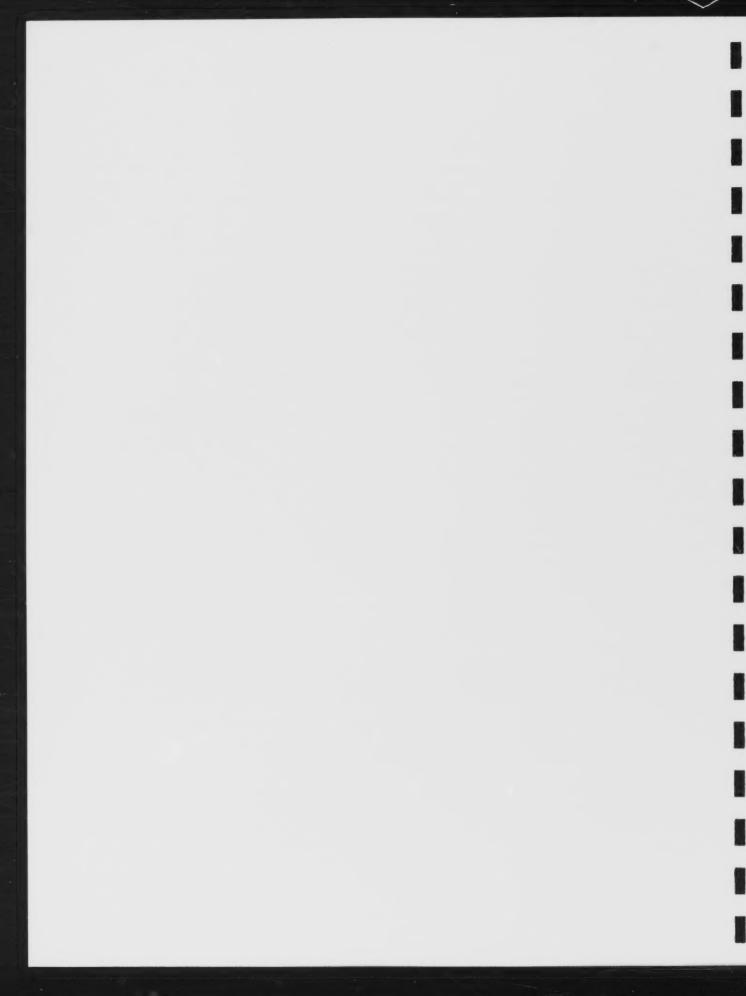
Layout of cut boundaries and AOC boundaries is an important part of plan implementation. This can be challenging in Bancroft because of the large amount of private land, and the challenges of marking among the numerous hills and water bodies. There were comments about inaccuracies in boundary layout by one contractor. Again, given the topography, incidences did not warrant additional action. However the Audit Team did note that there would seem to be good opportunities for using Global Positioning System (GPS) technology for line layout in some areas. We suggest the Company investigate increased use of GPS for improved accuracy and possible cost reductions.

# Suggestion # 14

The Company should investigate increased use of GPS for improved accuracy and possible cost reductions.

In-field values identification by the Company has been beneficial to the layout of harvest blocks. On occasion the Company staff, who have received training about hawk and nest identification, make nest assessments in the field. MNR feels that this is working well.

We reviewed a large number of harvest areas of different types, undertaken by various operators in different years, seasons and forest units. The Audit Team found that harvesting activities were generally undertaken to a high standard. Utilization and snag and standing tree retention levels were very good, damage to residual trees was at an acceptable level, and the Company was making good progress in preventing the incidence of site damage. The operations tended to produce little slash per hectare, being



largely partial harvests, and the slash was usually left in the bush. On one or two clearcut sites, the Audit Team observed slash piles had been left by roadside and not burned. Since these were harvests in the intolerant hardwood forest unit, burning the resulting slash can be challenging and piling is arguably preferable to leaving the slash along roadside since the piles mean less area is lost to future production.

The auditors reviewed the planned versus actual harvest area and volume figures for the audit period. Because the Annual Report for the 2005-06 year is not due until November 15, 2006, the final results for that year are not available at the time of writing. However, the Company kindly provided preliminary harvest data for 2005-06, with the caveat that the final figures could differ.

One of the key issues in the Southern Region in general is the low level of harvest utilization. Actual harvest area levels, as a percentage of planned, are often in the 45 – 60% range due to a variety of factors, which combine to produce low economic returns from harvesting on many sites, and negative returns on sites with poor access, low volume, and low quality. The inventory issues described above also contribute to low levels of utilization, since it sometimes turns out that the forest present on site is not suitable for harvesting. These areas are classified as by-pass.

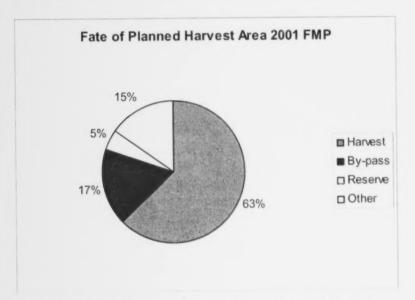


Figure 9. Fate of Area Planned for Harvest in the 2001 FMP.

Figure 9 shows the fate of the planned harvest area in the 2001 FMP. A total of 63% of the planned area was actually harvested<sup>14</sup>. An additional 5% of the area went into (uncut) reserves, and 17% of the area was by-passed. A total of 15% of the planned area was not

<sup>&</sup>lt;sup>14</sup> The Trend Analysis calculates that 69% of the planned harvest area was actually cut in the 2001-06 period; the average annual planned harvest used by the audit team was 3,868 ha, derived from Table FMP-15 of the 2001 FMP. The comparable planned harvest figure in the Trend Analysis is 3,669 ha, which accounts for half of the difference between the two estimates of percentage of planned area harvested.

 examined in the field and was not harvested – this is identified as "Other" in Figure 9. Thus, the Company has pointed out that 85% of the planned area was either harvested, reserved or looked at but found to be unsuitable for harvest at the time. However, this is not the same thing as saying that the utilization rate was 85%, since had the by-pass area been feasible to harvest, it is not certain that it would have been incremental to the total harvest. Nevertheless, the utilization rate on the BMF was on the high side compared to other forests in the region 15, and also showed an increase from 48 % in the two previous five-year periods.

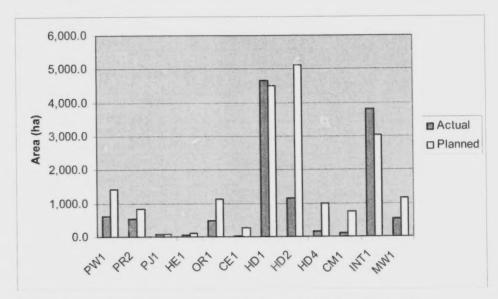


Figure 10. Actual versus Planned Harvest Area, 2001 FMP period.

Table 9 and Figure 10 compare the planned harvest area, as presented in the 2001 FMP, and the actual harvest area during the 2001-06 period, where the data for 2005-06 are preliminary. Among the major forest units where harvesting was quite low in comparison to planned levels are the HD2, HD4, and CM1 forest units.

The HD2 and HD4 are poorer quality hardwood stands. The HD2 class is described as young tolerant hardwood stands that require more tree improvement work (to reach their potential) and the CM1 forest unit has a high proportion of balsam fir in it, which is not a particularly desirable species. Harvesting was also quite low in the white pine and red oak forest units, attributed to poor markets for both species.

In contrast, actual harvest area exceeded the planned levels in the HD1 (actual harvest was 103% of planned) and INT1 forest units (126% of planned). This situation arose because some of the allocated forest stands turned out to belong to a different forest unit than the one that was determined based on the FRI species typing – in other words, stands

<sup>&</sup>lt;sup>15</sup> In contrast, utilization rates are often between 70 – 80% in the boreal forest.



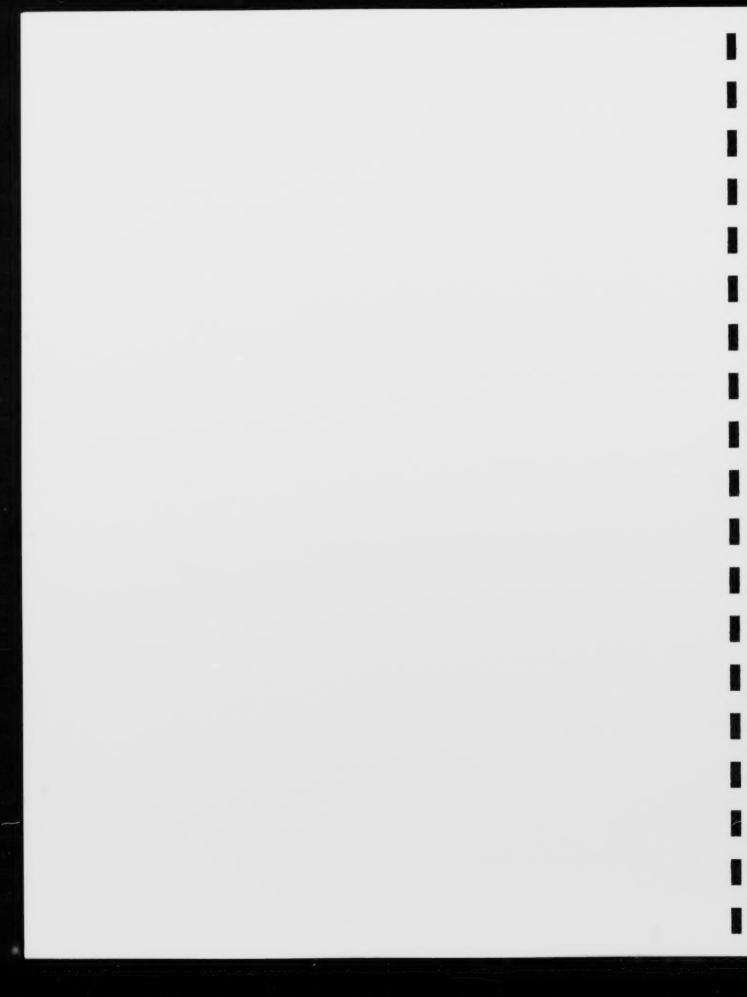
that were actually HD1 or INT1 were types as other forest units but this was corrected once the stands were assessed.

Table 9. Planned versus Actual Harvest Area (2001-06)

Forest Unit	Name	Actual Area Harvested (ha)	Planned Harvest Area (ha)	Actual as % of Planned
PW1	White Pine	608.0	1,419.4	42.8%
PR2	Red Pine	531.2	825.0	64.4%
PJ1	Jack Pine	71.7	75.0	95.6%
HE1	Hemlock	56.5	105.4	53.6%
OR1	Red Oak	478.4	1,125.1	42.5%
CE1	Cedar	14.6	255.2	5.7%
HD1	Hardwood Selection – better quality	4,657.5	4,505.0	103.4%
HD2	Hardwood Selection – lower quality	1,151.9	5,108.3	22.5%
HD4	Hardwood Shelterwood	154.4	1,000.0	15.4%
CM1	Mixed Upland Conifer	94.4	743.7	12.7%
INT1	Intolerant Hardwood	3,806.3	3032	125.5%
MW1	Mixedwood	524.1	1147.2	45.7%
SUM		12,149.0	19,341.3	62.8%

In the field, the appropriate SGR was applied to the actual conditions encountered and was appropriately reported in the annual reports. This situation is an indication of the accuracy of the FRI, and suggests that there are more INT1 stands (poplar/white birch) and HD1 stands on the landscape than are identified by the planning inventory. Based on these results, it appears that the FRI is **not** equally inaccurate across forest units on the Bancroft Minden Forest. This result also provides some indication that some of the underharvesting reported in individual FUs reflects changes in the forest unit once the field assessment has been undertaken. In some cases, a 10% change in species composition will result in a change in forest unit, and the Company also found that stands with 4 or 5 species in the stand descriptions are prone to having their stand boundaries redelineated at the prescription stage to identify mappable inclusions of other forest units resulting in a change in forest unit. The Company also pointed out that the spatial portion of the annual report submission does contain planned and actual forest unit as attributes for all depletions, and so the accurate tracking of operations in both the planned and actual forest units occurs.

As was mentioned above, the Forest was managed as two working circles during the 2001 FMP period. Separate AHA's and planned harvests were derived for the area of the former Minden CMU and for the former Bancroft CMU. This complicated the planning and allocation processes, and imposed additional constraints on management. In the 2006 FMP, there was one AHA and planned harvest calculated for the entire forest, and while there was a strong effort made to allocate the harvest in a manner that represented traditional harvest areas of operators, the Audit Team is pleased that the Company is moving towards managing the forest as an integrated whole, which will provide more management flexibility going forward.



Preliminary harvest area results were not available for the individual working circles, and so this assessment of planned versus actual harvesting is based on harvest activity in the first four years of the audit period. Harvest activity in the fifth year on the whole forest was just slightly above the average during the first four years, so this analysis by working circle is likely to be quite representative of the five-year results.

Actual harvest volume, in relation to planned, showed a similar pattern during the first four years of the audit period. The species with the largest planned harvest volumes are hard maple and poplar, accounting for 27 and 26% of the planned harvest volume, respectively. Red oak volume was planned to be 13% of the total, and white birch and white pine were each roughly 8%.

The actual harvest of poplar was roughly 95% of planned, or 56,000 m³/year compared to a planned allocation of 59,000 m³/year. This was by far the closest realization of planned volume among the major forest units. Hard maple had the next highest volume realization, with 75% of the planned 61,000 m³/year being cut. Together, these two species accounted for 70% of the harvest volume.

In all, the actual harvest volume (excluding salvage) was roughly 144,000 m<sup>3</sup>/year, which is 60% of the planned harvest volume of 227,000 m<sup>3</sup>/year. The white pine and white birch harvest volumes were just less than 50% of planned, while oak was only at 8% of planned. The consistency of the actual versus planned area and volume figures indicates that the estimates of yield are generally accurate.

Only a minor amount of salvage harvesting was undertaken, accounting for a total of 21,000 m<sup>3</sup> during the first four years of the audit period. This was on some blowdown areas and represented less than 4% of the total harvest volume.

In summary, the BMFC had a relatively low level of utilization of the planned harvest, but it was higher than that in many other forests in southern Ontario, it has increased compared to the previous plan period, and the Company looked at a substantial amount of area and declared it to be by-pass. The factors that are behind the low utilization levels are being experienced by the industry as a whole and do not reflect on the Company.

#### 3.4.3 Renewal

The audit reviewed a large sample of forest renewal and tending activities in the field. The Audit Team was favorably impressed by the enthusiasm, professionalism, and knowledge exhibited by BMFC staff involved with the audit inspections.

Actual renewal levels for the Bancroft Minden Forest vary from planned levels for two reasons.

- 1. The actual harvest levels (upon which the actual renewal activity is based) varied substantially from planned levels, and
- 2. The actual conditions encountered on the site(s) during field operations were different from what was anticipated.



As described above, the actual harvest area in the audit period was roughly 60% of the planned level, and the actual levels of site preparation and planting were 40% and 53% of planned, respectively. The Company also pointed out that final decisions regarding conversion of harvest areas can only be made once the areas have been operated and the site conditions known with certainty. Similarly, more area was planned for mechanical site preparation than was expected to be treated in order to provide flexibility for treatment, depending on site characteristics.

The renewal activities viewed by the Audit Team were appropriate for the sites and consistent with the SGRs and Provincial Guides. Many of the sites within the Bancroft Minden Forest, even after the "net downs" applied during the planning period, are challenged with shallow soils. Both BMFC and MNR staff, as well as the 2001 IFA report, cautioned that all renewal work must recognize site and soil limitations and attempt to minimize site disturbance. The Audit Team believes that the renewal activity carried out on the Bancroft Minden Forest is meeting this objective within this considerable limitation. In particular, the site preparation for planting viewed during the site visits, especially the prescribed burn in Dickens Township and the practice of slash alignment on shallow sites, are examples of well-planned and well-implemented renewal activity.

The issue of optimizing the use of available funding to meet renewal objectives was raised during the 2001 Bancroft IFA. The Audit Team looked at this issue with respect to the expensive prescribed burn carried out in Dickens Township during the audit term, partially funded by the Forestry Futures Trust, and the many planted areas augmented by natural regeneration in White Pine shelterwood sites. BMFC is meeting the objective of that IFA recommendation as well as fulfilling its obligations silviculturally.

The Audit Team was particularly pleased to see that the Company was able to ignite a successful prescribed burn. This site preparation method is rarely used in Ontario in recent years, due to the MNR's approach of charging Companies the "full cost" of the burn, and the high levels of precaution that often mean that when the indices are within the desired range for burning, fire crews are unavailable because they are either in action or on standby.

Renewal results in the partial-cut systems, in particular the Selection system, are greatly influenced by stem quality and size, species diversity, and residual stocking of the stands remaining after harvest. These parameters are affected by the care of the harvesting crew and by tree marking.

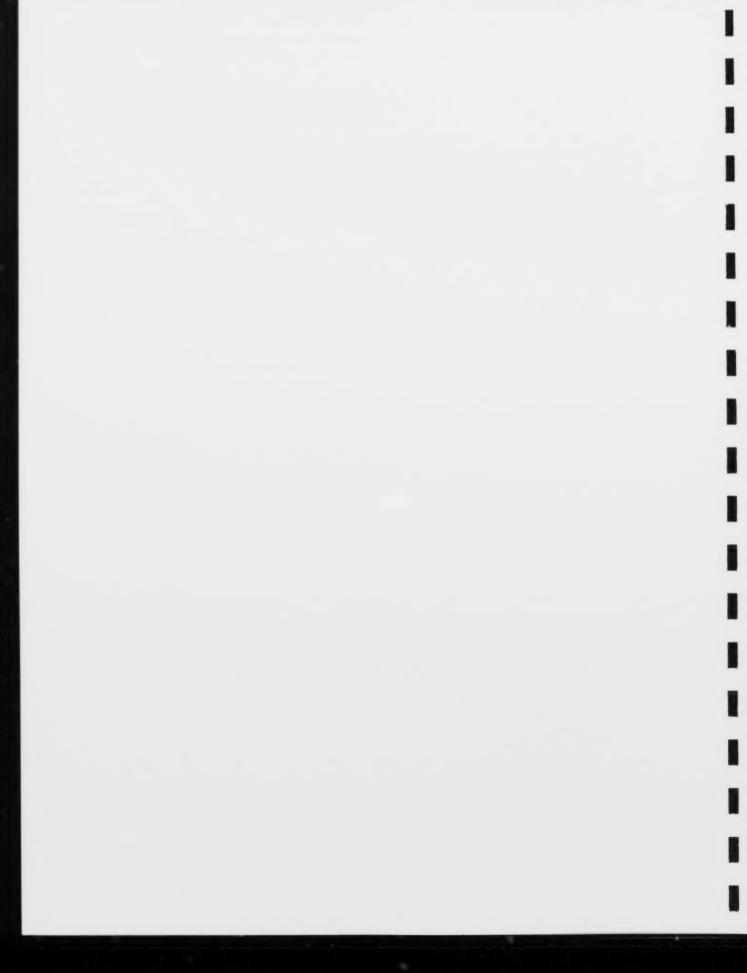
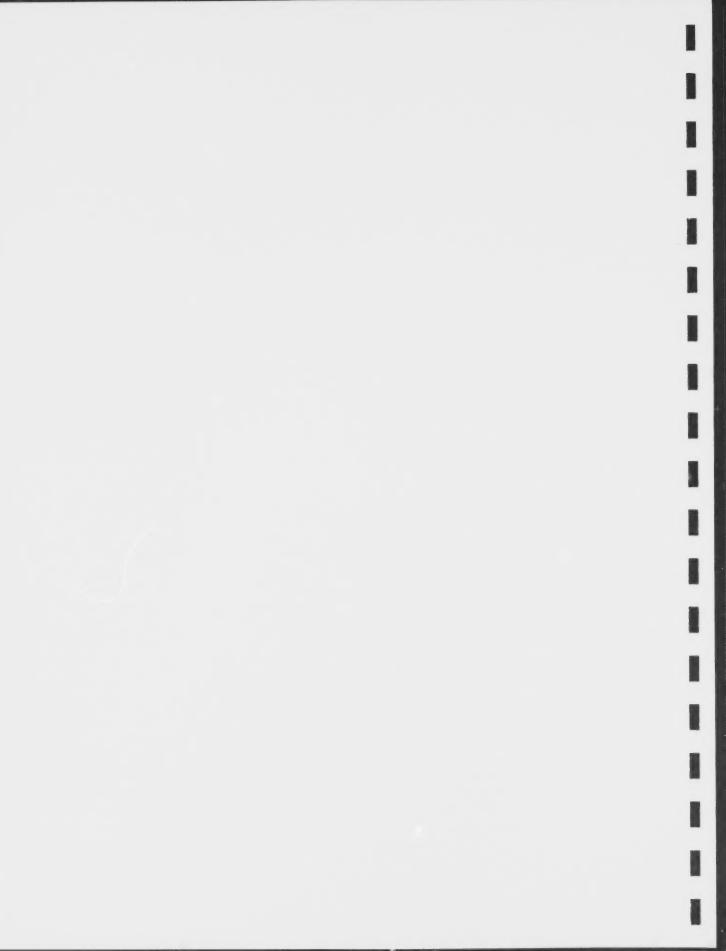




Figure 11. Prescribed burn site in Dickens Township.



Figure 12. Slash alignment.



BMFC utilizes a 6-class tree marking system, rather than the more traditional 4-class system, or the very simplified AGS-UGS (Acceptable Growing Stock – Unacceptable Growing Stock) system. MNR staff voiced concern that the tree marking standards could potentially lead to the retention of a less desirable mix of stem size, stem quality and species in the residual stand. After visiting many harvested and marked stands, and discussing the marking program with BMFC staff and tree marking contractors, the Audit Team is satisfied that the tree marking program is being applied appropriately using the 6-class system.

The 2001 Minden IFA recommended: "The Company must ensure that their Forest Operations Prescriptions contain, where appropriate, detailed provisions for the management of mid-tolerant species and that these prescriptions are implemented." The Audit Team viewed prescriptions containing these provisions and observed group openings installed appropriately in the field within tolerant hardwood stands, both on the truck travel portion of the audit and via helicopter. The care and enthusiasm demonstrated by contractor and BMFC staff is commendable. The Audit Team felt that BMFC, in its planning process, could enhance what is already good work by including in its next FMP, objectives, strategies, and measurable goals for the extension of this practice.

#### Recommendation # 16

That the planning team for the 2011 FMP include in the FMP clear objectives, strategies and measurable targets to promote the establishment and recruitment of mid-tolerant hardwood species on the Bancroft Minden Forest.

# 3.4.4 Tending and Protection

Actual tending activities on the Bancroft Minden forest met or exceeded planned levels during the term of the Audit. BMFC made good use of available funding from the Forestry Futures Trust to carry out many tending projects.

The decision to not employ aerial application of herbicide or insecticide by BMFC staff, and fully supported by BMFC shareholders, is viewed by the Audit Team as a prudent choice, considering the high number of other users of the forest. This still allows for the options of using herbicide to control competition under white pine shelterwood.

There is a considerable level of even-aged and uneven-aged spacing (approximately 1,137 ha. annually) carried out on the Bancroft Minden Forest. Even-aged and unevenaged spacing (which makes up the majority of BMFC's tending activity) is a good example of where and how tree marking can affect tending, as well as renewal and harvest in partial cut systems. Tree marking operations identify for removal (with yellow or orange paint) or retention (with blue paint) stems down to 10 cm dbh. Where the felling workload required to achieve the release of small diameter stems was excessive (e.g. Yellow Birch juvenile spacing in Hindon Township or stand improvement in some uneven-aged stands), the operator was paid a supplement from the Forestry Futures Trust or the Forest Renewal Trust.



Manual cleaning and ground chemical cleaning in conifer plantations viewed by the Audit Team was implemented appropriately.

Protection activity on the Bancroft Minden forest during the Audit Term was confined to eight hectares of ground chemical (Pounce) application in 2005 to control False Pine Webworm in the Snowdon Seed Orchard.

## 3.4.5 Renewal Support

Nursery stock was available to meet tree planting requirements throughout the term of the audit. The only seed source requirements were for Red Oak acorns and this acquisition was waiting on a good seed year for acorns.

### 3.4.6 Access

As discussed previously, the Company benefits from many municipal and county roads, and is primarily responsible for its own operational roads. There are issues with other users on these roads, however the main environmental risk is from water crossings.

There were no significant primary or secondary roads constructed in the term of the 2001 FMP. One existing tertiary road was reclassified as secondary during the term of the audit. This change was regarded as necessary because harvest and renewal activities during the first two years of this plan term required use of the road beyond the 5-year limit on tertiary roads. Alternative routes were examined. As demonstrated, the planning team takes the increase in tertiary roads or extension to secondary roads very seriously.

We examined the road maintenance agreement for fiscal 2005-2006. The Company spent a total of \$142,447 for maintenance on about 190 km of roads. We were able to follow the records for all of the roads and verify that the attached invoices applied to the assigned activity. It was difficult to verify specific work done months prior to the site visit, however we did drive on a number of the roads indicated on the invoices, and found the quality to generally be good. The Company diligently supervises the work to ensure there is value for the money spent, since roads are of value to all of the operators. There is little risk of misdirecting funds in an operation with so many shareholders dependent on the road network.

As discussed above, access management is a major issue on the BMF, and abandonment of operational roads is considered the norm at this point. The standards for road abandonment are found in the FMP and AWS, and compliance should be fairly clearly defined. Water crossing removal is also a key access management approach; there has been a much better use of temporary bridges over the term of the plan, but there are still some challenges in installation of those as well.

One example of a challenging access restriction was in operations near an enhanced management area (EMA), where one of the operators developed an access management plan with the assistance of the snowmobile club because it was a winter operation that



would use their trail system. Two portable bridges were required. The operation was carried out successfully, based on 12 Company reports filed on activities. The Audit Team flew the skyline reserve in this area and found it intact and impossible to tell any operations had occurred. Eight bridge removals in the area were also examined; the results of these operations were acceptable, facilitated by the use of skid bridges.

Throughout the course of the audit period, the LCC has raised concerns about the negative impact of logging operations on water-bodies, particularly in regard to water crossings, and roads and skid trails located in close proximity to water-bodies, particularly wetlands. The LCC has during recent field visits to the BMF identified impacts to water-bodies, the BMFC and MNR have acknowledged these impacts and where appropriate, remedial action has been taken. During the field visit by the Audit Team, road crossings and operations adjacent to water bodies were examined, including some of the areas of concern identified by the LCC. The Audit Team agreed that impacts to water-bodies had occurred on some sites due to logging operations.

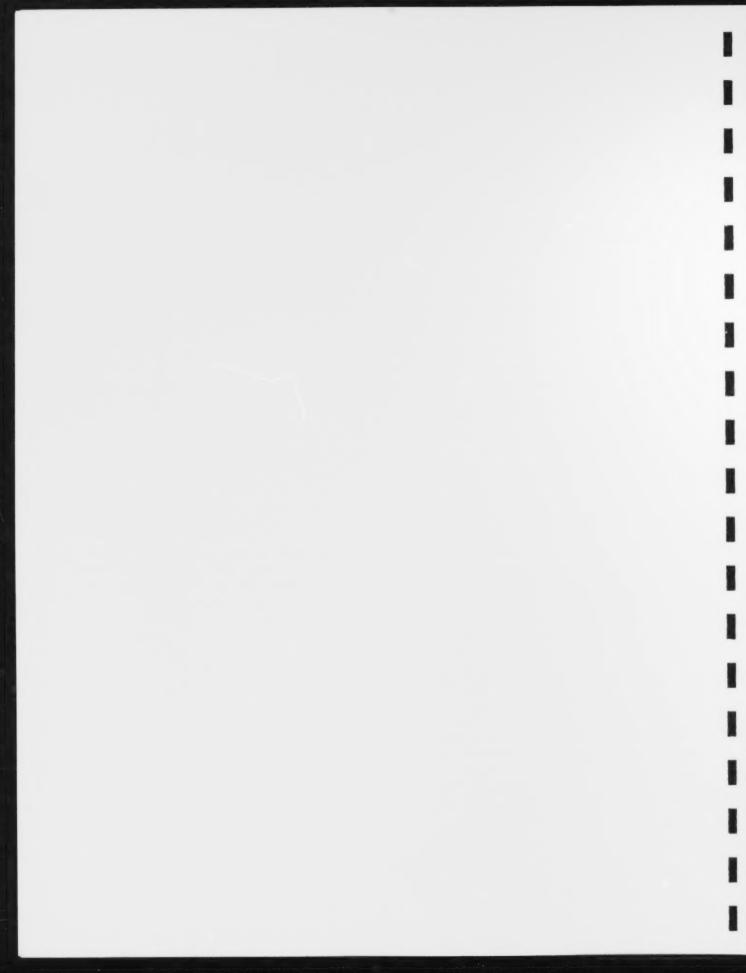
There are still some operators who have problems with installation of water crossings. There has been a fair time commitment on the part of the Company and MNR to oversee installations. Mandatory standards for water crossings are found in the "Environmental Guidelines for Forest Access Roads and Water Crossings" but these were not captured specifically in the plan. The planning team members noted that there has been a push to bring more of the details of the guides into the plan because there is better enforceability once they are described in the plan. Over the course of the plan, only 4% of noncompliances were related to problems with water crossings. The observations of the audit team supported the compliance reports, in that water crossings were generally of good quality.

The Audit Team considered the concerns and evidence related to water crossings and decided that a recommendation was not warranted specifically regarding water crossings. The field inspections undertaken by the Audit Team did not find evidence of a systematic problem and there were only 1 or 2 relevant non-compliance incidents during the audit period. Given the lack of evidence of major problems with water crossings and abandonment, we felt that these issues can be best addressed through a more disciplined approach to training, as is captured in Recommendation # 19. That recommendation enjoins the Company and MNR to try to capture the contractors and operators who usually don't come to training courses and who are likely responsible for the majority of crossing problems. In addition, MNR is optimistic about the new risk-based approach to supervising compliance. In the 2006 plan, there has been more of an effort to capture compliance guidance, which should translate into clearer guidance to operators, better performance, and a stronger basis for enforcement, if needed.

#### 3.5 SYSTEM SUPPORT

### 3.5.1 Human Resources

Achieving SFM has led to complex rules that continue to be refined over time, necessitating regular training at all levels to ensure that existing and new rules and



regulations are understood and implemented correctly. Compliance training and other training opportunities are provided to Company staff. There is an excellent relationship in this small professional office, and opportunities for increasing skills are accessible.

The BMFC does not have a formal environmental management system (EMS) such as ISO 14001, that includes Standard Operating Procedures (SOPs) to address forest management planning and operations, or specific procedures for training to address training planning and training records and SOPs for Harvesting Contractor EMS Roles and Responsibilities. Nonetheless there is a variety of formal training courses offered and/or facilitated by BMFC and informal training that occurs whenever Company staff work with operators in the field (e.g. start-up meetings).

Table 10. Formal training courses run by BMFC during the audit period.

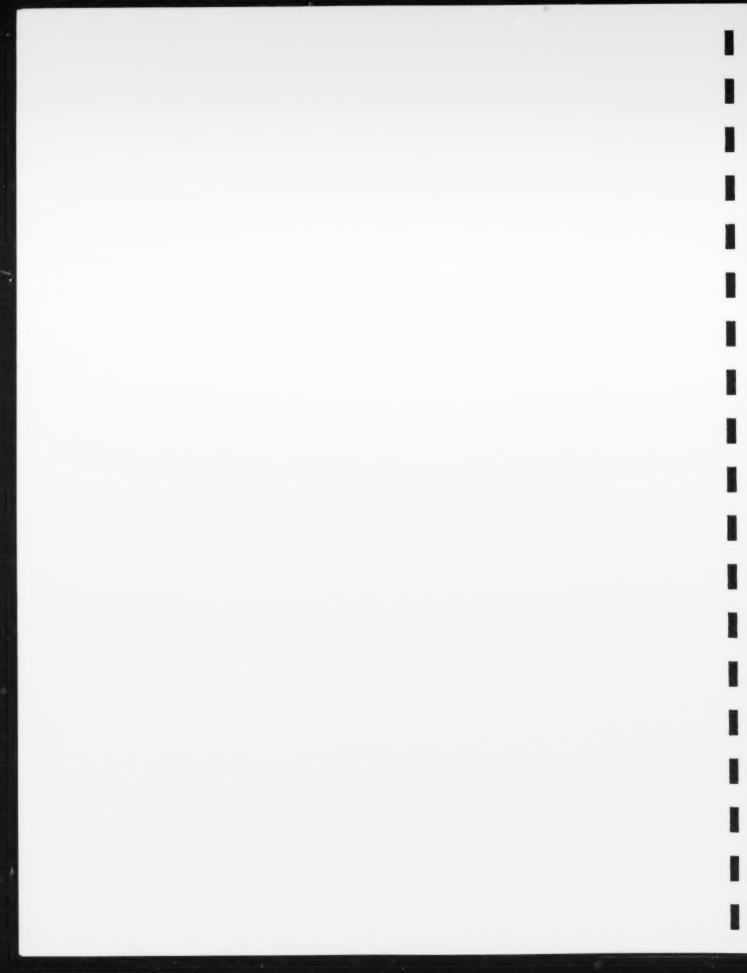
Course Type	# of courses	# of hours	# trained
S-102 Fire	7	55	55
Cavity Trees	8	15	19
Water Crossings	9	45	35
Silviculture Systems	4	19	38+
Logging Damage	6	11	14
Heritage Zones	1	0.5	1
Compliance	9	24	110
Unknown	2	5	13
Totals	46	179.5	285

The BMFC takes the lead in staff training for operators on the Bancroft Minden Forest. The 2003-04 BMFC Compliance Plan noted: "BMFC recognizes that training of forest workers is one of the most efficient methods of obtaining improved forest operations compliance."

The BMFC maintains a binder that records formal training sessions and this information has been summarized for the audit period in Table 10. On average, each year the Company offered 10 courses that trained a total of 60 persons. Given there are approximately 160 persons working on the BMF in any given year, this suggests approximately three-eighths of the workforce receives some training each year. There did not appear to be much reliance on training offered by outside agencies, other than MNR's normal course delivery.

The majority of training is for compliance, and here the records were difficult to follow. Table 10 shows compliance training to have been delivered to about 110 people over the course of the five year term, or 22 people per year. Accounting for some turnover, this

<sup>&</sup>lt;sup>16</sup> As an indication of the difficulty in assessing training attendance, the 2003-04 BMFC Compliance Plan noted that 86 people attended 3 workshops on compliance in 2002; in 2003 and 2004 the number of attendees at similar workshops was 19 and 18, respectively. The total number of participants was 123, higher than the value shown in Table 10.



would suggest that 1/3 or more of the people working on the Forest do not receive compliance training in a five-year period, which is a relatively low rate of exposure to specific "compliance" training. Although total numbers for total courses shows about one third of staff are trained each year, this does not equate to a complete training program and does not reflect well on specific compliance related training. While the low number of non-compliance reports for the BMF (see section 3.6.1) would suggest the existing levels of training are effective, the Audit Team feels that the gaps in training (almost 40% of workers in the BMF did not receive any compliance training during the audit period) are substantial and should be closed pre-emptively. We have recommended that there be additional work on compliance training led by the Company, with the assistance of the government (Recommendation # 19). We realize that getting turnout may be the big challenge, since there is evidence that opportunities have been provided.

The Audit Team did not find records for overlapping licensees to be readily accessible, and this made some of the numbers about who had been trained in compliance somewhat vague. In addition to the requirement for more extension work related to training, we are recommending that there be better record keeping for licensees, operators and forest workers in order to demonstrate progress (See Recommendation # 17). In a work area such as forestry where professionalism is highly regarded and public perception of compliance is so important, there should be better training record keeping.

The well-recognized standards of an EMS program would require the BMFC to more carefully schedule and track training programs for staff and operators on the forest. More comprehensive record keeping of training permits analysis that may provide greater understanding of future staff training needs and the effectiveness of training.

MNR personnel were very experienced and aware of their responsibilities. MNR has a well-organized and effective training program in place to provide the most current direction and interpretations to both MNR and Company staff involved with the development of forest management plans. It is centrally administered from Sault Ste. Marie, with a series of FMP training modules held regionally each year for all active planning teams. This is an important mechanism through which MNR strategic direction is implemented at the forest level.

# 3.5.2 Documentation and Quality Control

The Audit Team found that MNR documents and records related to the production of the FMP, FMP amendments annual reports, annual work schedules, and AWS revisions were for the most part well-organized and easy to retrieve. Auditors' requests for information were dealt with promptly by staff that knew the location of the materials requested.

As discussed previously (see Section 3.2.1), the record of LCC minutes lacked detail.

Company records were usually organized and accessible, and staff were very knowledgeable about where records were located. The Audit Team felt that improvements in record-keeping could be made with regard to amendments (see section 3.3.9 for a more detailed discussion), training (see 3.5.1 for a more detailed discussion),



and annual report submission. The following recommendation is intended to address these areas of record keeping:

#### Recommendation # 17

That the Company improve its record-keeping systems in the following areas:

- · amendments;
- training (attendance at and delivery of training programs, in particular the type of training programs delivered and the names and affiliations of persons delivering and receiving the training); and
- annual report submissions and re-submissions.

#### 3.6 MONITORING

#### 3.6.1 General Monitoring

General monitoring consists of regular silvicultural monitoring and assessment, as well as compliance monitoring. The Company is responsible for silvicultural monitoring while the MNR and Company share compliance monitoring responsibilities.

Silvicultural Monitoring

BMFC staff met their general monitoring obligations with respect to silviculture. They completed tree marking audits as necessary and one- and three-year survival assessments were completed in plantations, and free to grow (FTG) surveys are up-to-date. This monitoring was completed as staff time became available and was reported via the BMFC planning forester.

While the assessments that were undertaken were well done, and records were maintained in an organized manner, the Audit Team noted the Company's casual approach to scheduling monitoring and reporting on silviculture projects. There was no formalized timetable for monitoring, and if it is not explicitly scheduled, the Audit Team is concerned that follow-up visits can often be one of the first activities to be dropped in the event of an unexpectedly heavy workload or shortage of personnel.

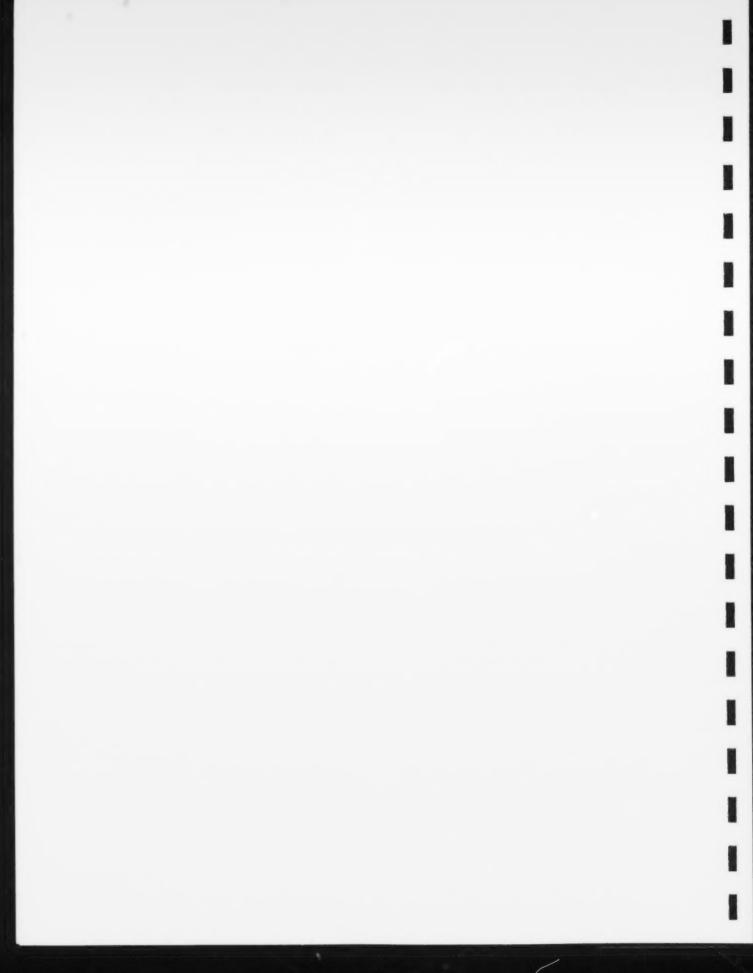
While this approach has worked effectively for the Company over the audit term, the Audit Team felt that as the rigor needed to meet required levels of silvicultural effectiveness monitoring increases, a more formal approach would be prudent. The Audit Team feels that assurance that the forest is being managed sustainably is dependant on confidence that follow up monitoring is complete and up to date.

#### Recommendation # 18

That BMFC staff continue to work towards a more formal approach to silviculture monitoring and reporting.

Compliance Monitoring

Bancroft District MNR is responsible for writing Annual Compliance Operations Plans (ACOPs). The Company is responsible for writing and delivering a five-year compliance



plan, that is included as an appendix to the 2006 FMP and runs for the duration of the FMP term. The purpose of the compliance plans is to summarize the goals, objectives and strategies of each organization's compliance program.

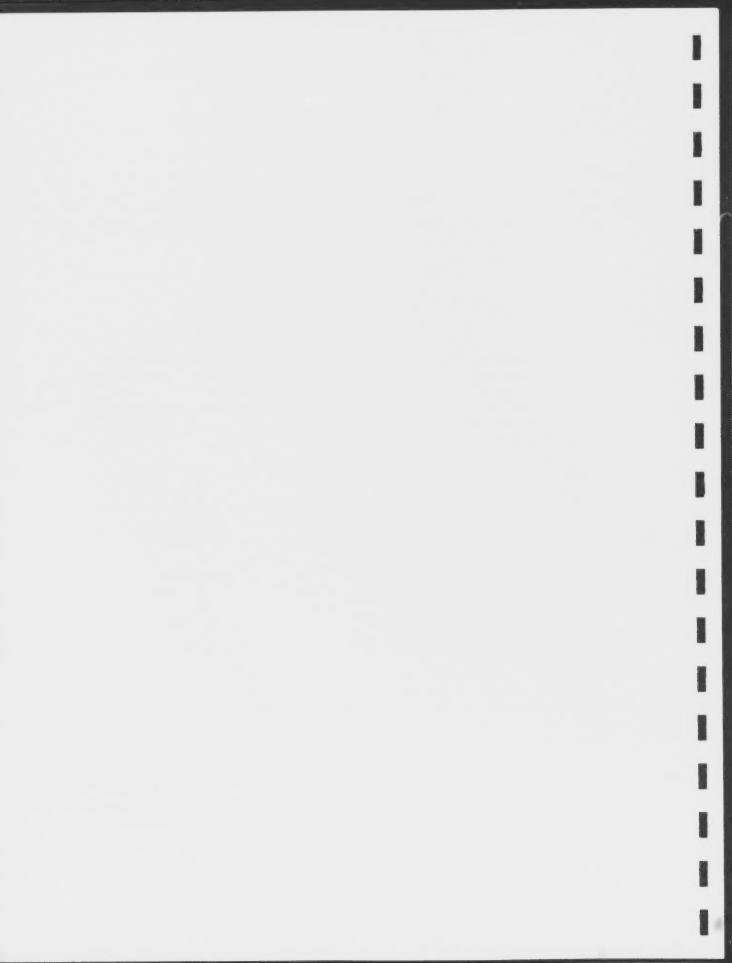
The format of the ACOPs from MNR has changed over the five-year term. The ACOP for the last year of the audit term provides a readable itemized list of forestry activities with associated responsibilities, objectives and completion schedule. The latter is a generic format stating time limits for completion rather than dates on a calendar. This is translated into actual inspections on the annual schedule of activity.

This recent ACOP contains a discussion of the risk-based approach to compliance. This is a relatively new approach, which we investigated, by examining the most contentious part of forestry, which is harvesting. We followed the exercise of allocating risk to operators and locations. We verified the scheduled inspection targets for this year. The assessment is carried through, risk assigned and it appears to be a sensible approach to compliance inspection. The primary difference was that in other District ACOPs, there was an expectation of a minimum number of inspections, say at a level equivalent to 10% of the Company inspections. The risk based approach does not set a minimum number in the ACOP, but there is a protocol for assigning inspections based on risk, which arrives at a total number of inspections that will at least equal previous years, and is assigned in a more rational and fair manner. We accept that the approach has merit.

Formerly, there was a requirement that MNR should also produce a five-year District Compliance Strategy document, in addition to the ACOPs, but this no longer appears to be a requirement. The District's 1999 Compliance Plan ran from 1999 until its expiry in 2004. Discussions with District Enforcement staff and Compliance Branch staff indicate that Districts were advised in 2004 that they were no longer required to prepare 5-Year Plans at the District level. The intent is to move towards a Regional risk-based planning framework for compliance and enforcement activities. In fact in Bancroft District this did happen, and the current ACOP is a risk based approach.

Both the 2001 and 2006 FMPs had appropriate discussion of the compliance activity related to AOCs and silviculture effectiveness, and the Company five-year compliance plans were verified to be in accordance with the requirements of MNR's Guideline for Forest Industry Compliance Planning (2005). Large forests with many workers are very dependent on records to evaluate the total effort expended on particular strategies. The Company compliance plan includes good strategies, including one for training related to a number of issues. Training records for staff are good, the records for operators and licensees are quite thin. It is very hard for us to monitor the quality of training except through performance; this is not an ideal situation.

Company staff also provide on-site training in the course of their surveillance and supervision of operators. This informal training can be valuable but is not tracked and is not organized so as to reach all operators and contractors; it supplements but does not substitute for more formal training.



While no particular systemic problems were encountered, there were some areas that were weak; site damage and water crossings were raised as concerns by a number of people. We are making two recommendations related to compliance and training: one is performance based, related to attendance at training (Recommendation # 19), and the other, more process based, regarding record keeping (Recommendation # 17), to demonstrate achievement of the first recommendation.

#### Recommendation # 19

That the Company, with the assistance of MNR, improve outreach efforts and attempt to provide compliance training to all forest workers, licensees and contractors, starting in the 2007-08 fiscal year.

Forest Operations Inspection Reports (FOIRs) and Forest Operations Compliance Inspection System (FOCIS) reports were examined for field sites visited. Documentation was thorough with ample use of maps and pictures. Text was complete and the Audit Team could discern the nature of the inspection and, if any problems occurred, the nature of the remedy. The inspections followed the guidance in the compliance plan. AOCs were named as a focal point.

Compliance Monitoring Results

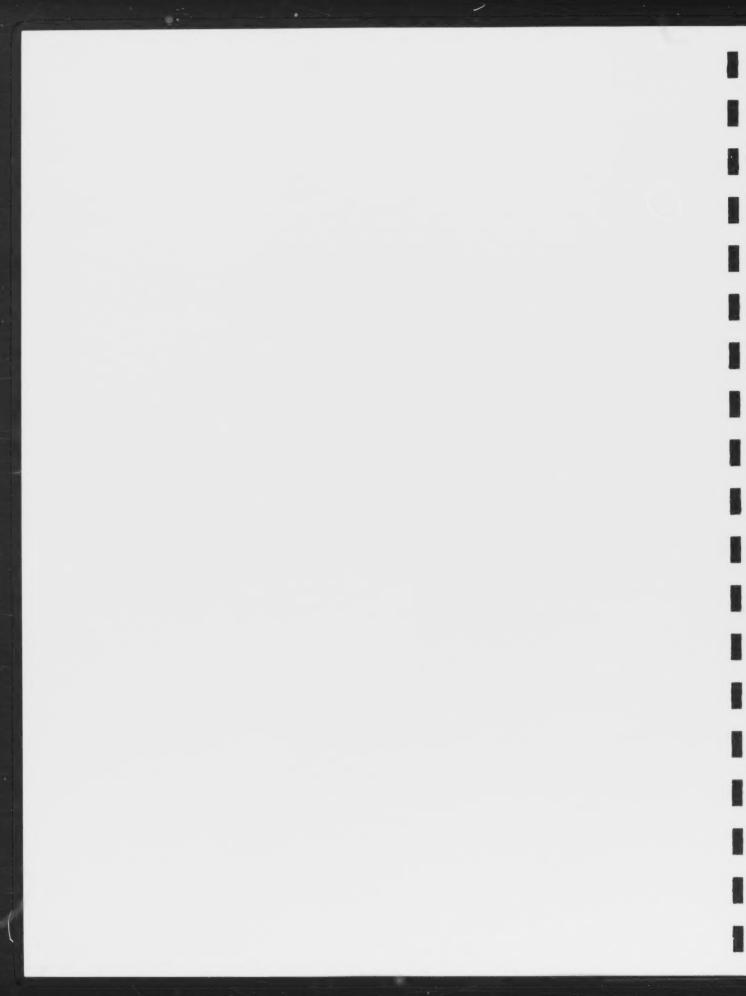
During the five years of the audit term, based on the statistics reported in the plan and verified from FOIP, the SFL submitted an annual average of 120 forest operations compliance reports to the MNR, of which an average of 5 or 3.4% were non compliant. MNR submitted an average of 27 compliance reports per year. These are summarized in Table 11.

Table 11. Compliance Inspection Summary from Annual Reports.

Year	Inspections by SFL		Inspections by MNR	
	Total	Not in Compliance	Total	Not in Compliance
2001/2002	144	3	20	2
2002/2003	186	6	20	2
2003/ 2004	121	5	29	8
2004/ 2005	72	3	37	1
2005/ 2006	71	4	28	2
TOTAL	594	21	134	15

The non-compliances were associated with the following issues:

- problems with Areas of Concern (incursions into AOC's, timing restrictions); wasteful practices (leaving lodged trees, high stumps, merchantable trees);
- 13% site damage, mostly soil rutting exceeding the standards in the FMP and AWS;
- 8% contravened conditions of Authority to Haul Unscaled Crown Forest Resources;
- 6% damage to the residual stand exceeding the standards in the FMP and AWS;
- 6% cutting unauthorized trees; unmarked trees were cut in partial harvest blocks;
- 4% water crossing issues; and
- 3% compliance issues with the abandonment of tertiary roads.



Based on reporting, the level of non-compliance that occurred on the Forest during the audit period was regarded as being within normal bounds.

A review of the compliance inspection and non-compliance reports does not show significant trends (Table 11). The decline in total inspections in the middle of the term reflects a changeover in the compliance system from FOCIS to FOIP, and reflects a reduction in the number of reports filed, not necessarily a reduction in the level of inspections. In that regard, there are no summary statistics available to assess whether the level of effort changed or remained the same. A review of a number of FOIRs, which rolled up multiple visits, does indicate that there is a significant number of visits. The Audit Team regards the level of effort as being reasonable, and we are not recommending that additional tracking is required.

One of the main tasks of the audit is to determine if the actual level of the overall monitoring program jointly established by MNR and the Company was in accordance with the monitoring plans and whether it was appropriate to the conditions. The Audit Team concluded that the scope of forest operations inspection reports (FOIRs) relative to the approved compliance plans and the actual level of forest operations is appropriate. The SFL and MNR staff in charge of compliance meet regularly and attend regional and provincial compliance meetings. Adjusting compliance efforts to an appropriate level of effort to meet industry norms is the natural product of the staff being engaged in a wider discussion of compliance.

There was concern expressed to the Audit Team about the general quality of water crossing installations. We note that this did not translate into a large number of non-compliances or in compliance with comments in FOIRs. The Company expressed its concern by committing in its plan to "Continued vigilance will be required in the planning, monitoring and abandonment practices with water crossings." So despite some comments, we do not have a finding about water crossings *per se*.

We also looked into two other issues that were brought our attention. First, site damage is always a concern. As stated by the Company, more effort is required in the prevention, rather than the rehabilitation of site damage: rutting, soil compaction, or disruption of natural drainage patterns. They committed to an increase in training, either in the field or in workshops. Although there were incidents and some FOIRs reporting site damage problems, again we did not find evidence that the problem is significant or out of control.

Mechanical harvesting is steadily increasing in the BMF. The majority of the harvest allocation consists of partial harvest systems, where logging damage standards apply to the residual trees. There are a number of feller-buncher operations in the unit and they account for an increasing proportion of the volume harvested and harvest area completed. "The use of feller-bunchers and grapple skidders has caused concern in partial harvests. In particular, site disturbance through excess ground coverage, logging damage to residual trees and unauthorized removal of unmarked trees in order to reach trees that are authorized for harvest have been concerns raised. Continued improvements in harvest



layout and operator training and experience have contributed to mechanized operations meeting compliance standards in most cases." (Company Five Year Compliance Plan) Field observations by the Audit Team showed good performance. FOIR did not call special attention to mechanical operations. Again the standard has been met.

MNR and the Company meet once a year to talk about training for compliance issues. There is no scheduled interaction between MNR compliance staff and licensees, operators, and forest workers.

Overall, the forest operations compliance program operates efficiently and effectively with emphasis on voluntary remediation of operational problems. Issues are identified and characterized correctly, and both the Company and District inspectors have worked out a compatible and accurate view of "conformance"; there is a good rapport. The need for greater awareness of compliance issues among some workers can be addressed through additional training. The corrective measures including penalties were suited to the circumstance. The program is taken seriously by all the parties involved, and appears to be achieving excellent results.

## 3.6.2 Annual Reports

Annual reports prepared under the 1996 FMPM included both a spring submission for silviculture due on April 15 and a fall submission containing harvesting information due on Nov 15. Annual reports prepared under the 2004 FMPM consist of just one submission, due by Nov. 15. The 2004 FMPM requires that annual reports for the last year of an FMP prepared under the 1996 FMPM include the additional requirements associated with year-ten annual reports. Therefore, the annual report for 2005/06 will contain the additional year-ten material, but it will not be due until Nov. 15, 2006, after this audit is completed. Therefore it was not available to be included in this audit.

Table 12 summarizes the submission and review dates of the annual reports due within the audit term. The first four entries in the table are for the spring and fall annual reports for the Minden Crown Unit and the Bancroft Crown Unit – the two management units which were merged to create the Forest. They are included in the table as they were due within the audit term, even though the activities which they reported on occurred prior to the audit term. The table shows that eight of the eleven annual reports due within the audit term were submitted on time. Those which were late were not egregiously so.

Table 12 shows that the MNR responded promptly to annual report submissions, within the FMPM target of 30 working days. The Company's re-submissions were not always within the target 30 working-day period, but again, they were not so far off as to trigger an audit finding. Table 12 also shows that there were several instances in which the Company's records regarding submissions and resubmissions were incomplete. Although record-keeping will be easier and more streamlined with AR submissions now occurring through the Forest Information Manual (FIM) Portal, it will still be necessary to keep records sufficient to verify that submission procedures have been followed (See Recommendation # 17).

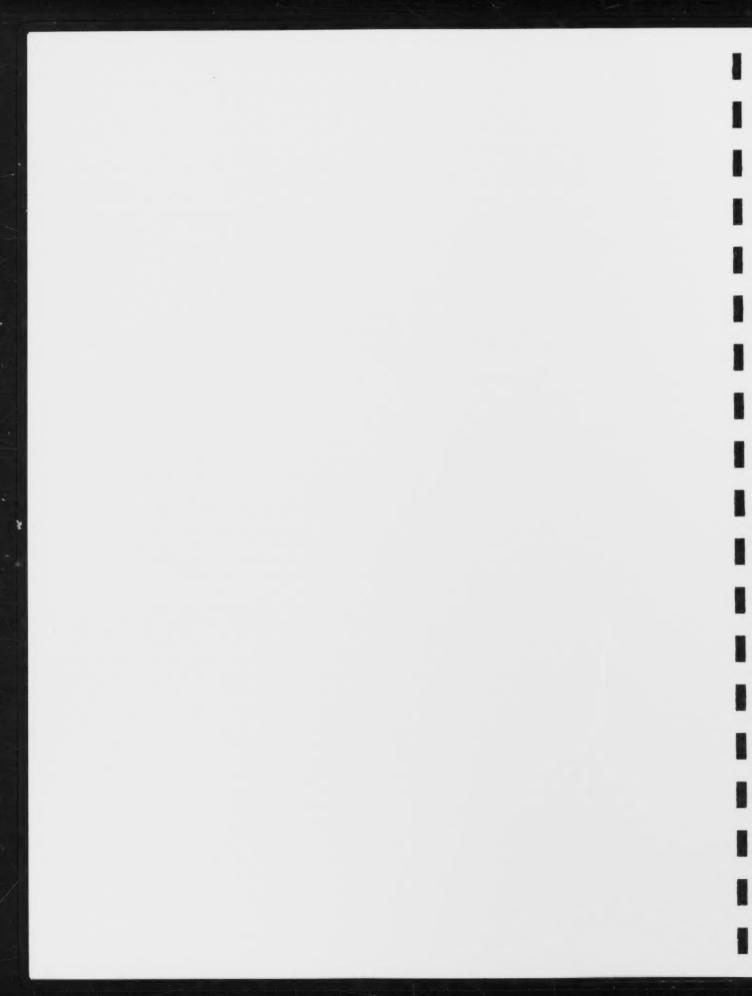


Table 12. Summary of Annual Report Submission and Review Dates

Report	Due	Original Submission	MNR Response	Revised Submission	Notes
Bancroft Spring 00/01	April 15/01	April 10/01	April 22/01	May 18/01	No record of acceptance by MNR
Bancroft Fall 00/01	Nov. 15/01	Nov. 16/01	Dec. 14/01	Jan 29/02	No record of acceptance by MNR
Minden Spring 00/01	April 15/01	April 10/01	April 22/01	May 17/01	No record of acceptance by MNR
Minden Fall 00/01	Nov. 15/01	Nov. 16/01	Nov. 28/01	Jan. 29/02	No record of acceptance by MNR
Spring 01-02	April 15/02	July 5/02	July ??/02 <sup>a</sup>	Aug. 12/02	Accepted by MNR on Dec. 2/02 <sup>b</sup>
Fall 01/02	Nov. 15/02	Nov. 19/02	Dec. 13/03	Jan. 24/03	Accepted by MNR on Feb. 3/03
Spring 02/03	April 15/03	May 12/03	May 21 & Sept. 18/03	Nov. 26/03	Accepted by MNR on Jan. 20/04
Fall 02/03	Nov. 15/03	Nov. 13/03	No record of revision requests		Accepted by MNR on Jan. 20/04
Spring 03/04	April 15/04	May 3/ 04	Not dated	Nov. 15	July 14/04 <sup>c</sup> Accepted July 14 with qualifier that some tables be revised with Fall AR
Fall 03/04	Nov. 15/04	Nov. 15/04			No record of MNR review
04/05	Nov. 15/05	Nov. 15/05			Accepted without review

a -specific date not indicated

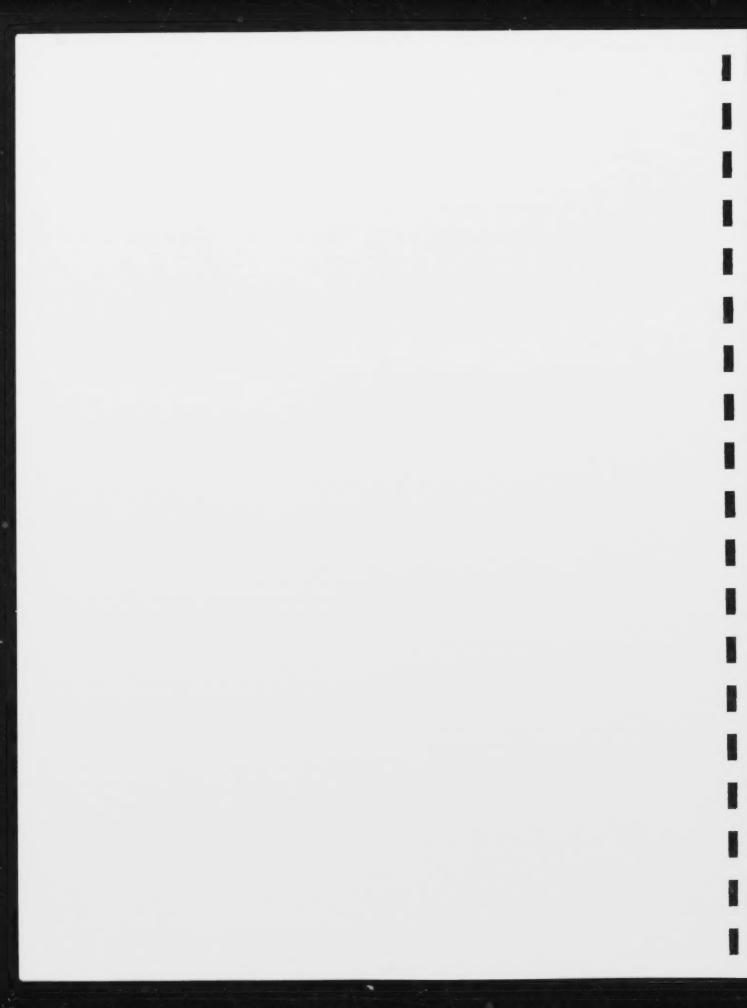
All the annual reports contained the required content. Tables were complete and textual descriptions of trends and issues were clearly written. The textual portions of the reports for the first couple of years after creation of the Bancroft Minden Forest were particularly well-done and contained a level of explanatory text sufficient to provide the reader with insight into the issues faced by the forest managers. In the latter years the amount of explanatory text decreased, such that it does not provide readers with the same understanding of the forest as the earlier reports did. In Suggestion # 15 we encourage the Company to continue providing rich textual discussions in the Annual Reports.

# Suggestion # 15

The Company should provide explanatory text in its forthcoming Annual Reports of comparable quality to that in its earlier annual reports.

<sup>&</sup>lt;sup>b</sup>-MNR provided a response to the resubmission on Aug. 21; the Company then provided a 2<sup>nd</sup> resubmission on Nov. 1, which the MNR accepted on Dec. 2/02

c – the report was accepted with the qualifier that some tables were to be revised and submitted with the Fall AR on Nov. 15 – an obligation met by the Company



# 3.6.3 Report of Past Forest Operations/ Year Ten Annual Report

The 1996 FMPM required that a Report of Past Forest Operations (RPFO) be produced as part of the planning process. (Under the 2004 FMPM an RPFO is no longer required, since its function has largely been replaced by the Year Ten Annual Report). The RPFO was intended to serve as a background information document for use in preparing an FMP. The document was to summarize actual operations which were carried out during the most-recently completed five-year plan term. Since during that term (1996-2001), the Forest existed as its two precursor units – the Bancroft Crown Unit and the Minden Crown Unit, therefore, the Company prepared two RPFO's – one for each Crown unit.

A preliminary draft of the RPFO was to be submitted to the MNR within two years of the expiry date of the most recent FMP. Therefore, for the Bancroft Minden Forest, the preliminary RPFO was due on March 31, 2003, and was to summarize operations from the 1996-2001 plan terms. The documents were submitted to MNR on July 17, 2003, approximately 3  $\frac{1}{2}$  months late. As noted earlier, the RFPO's have been replaced by enhanced annual reports.

The RPFO's are well written and provide good discussions on achievements during the plan term and reasons for variation between planned and actual results. The RPFO's include discussion and data on the years 2001-2003 where appropriate, exceeding the requirements, and presumably making them more useful in the preparation of the 2006 FMP. The IFAPP requires auditor scrutiny of several aspects of the RFPO. Table 13 presents a summary of the audit's assessment of the RPFO's.

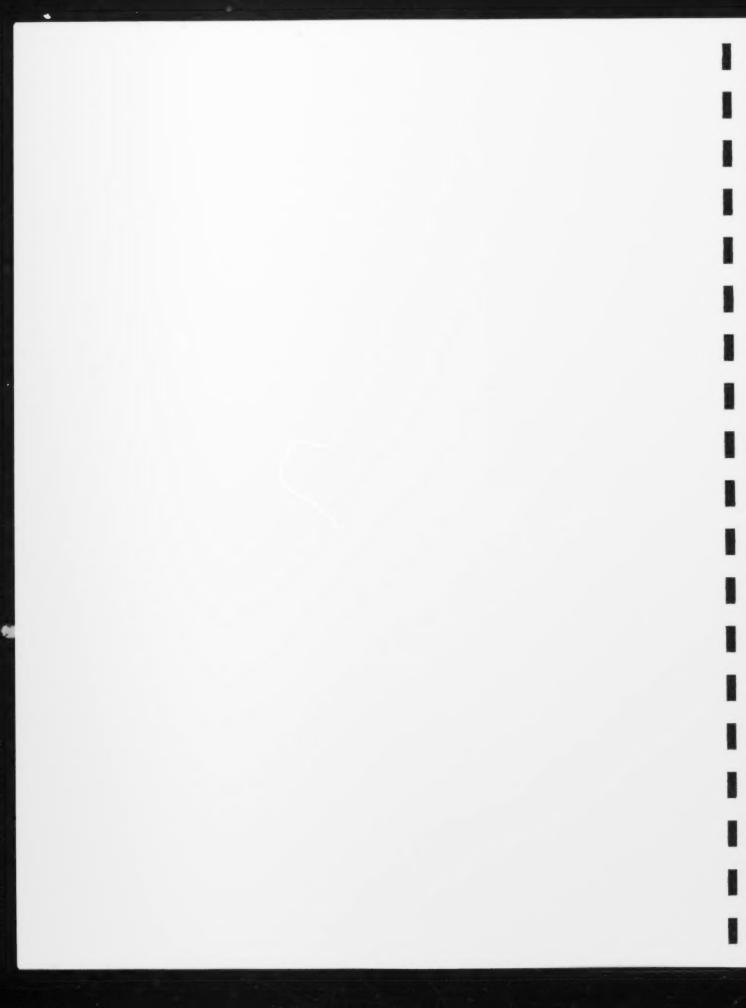
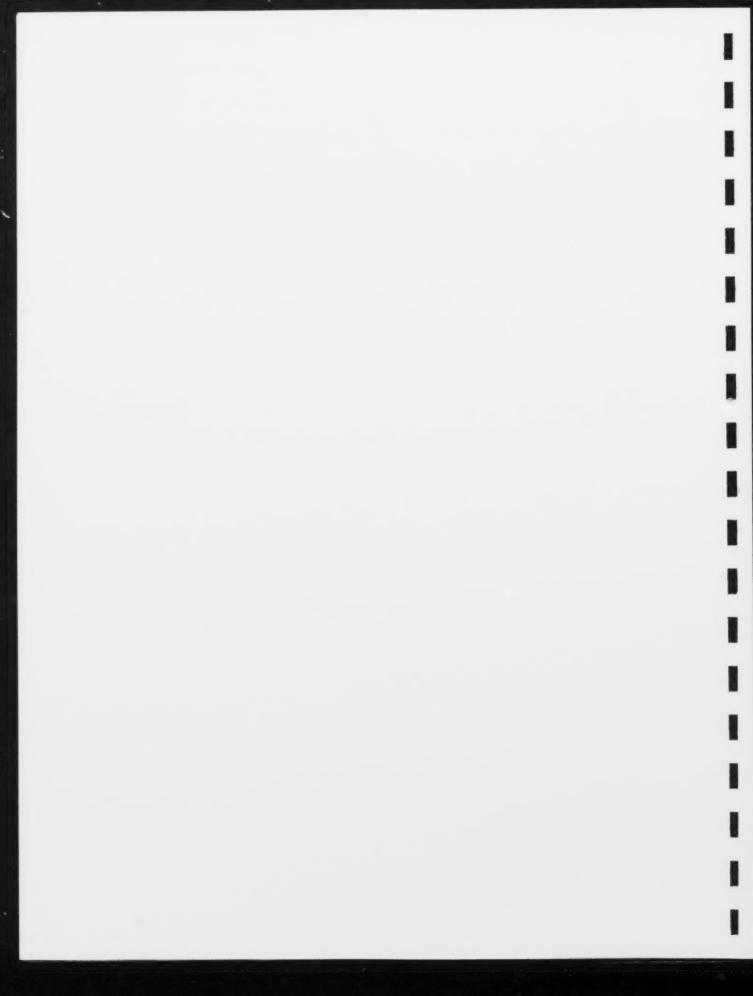


Table 13. Summary of the RPFO's prepared for the Bancroft and Minden Crown Units.

RPFO Element	Audit Assessment
Submission of Preliminary RPFO	Documents were submitted approx. 3 ½ months late.
Summary Document	A summary document of the RPFO's was prepared and included as one the 2006 FMPs supplementary documentation volumes.
Analysis of planned vs. actual results	This aspect of the RPFO's is very well done. Each of the FMP-required sections (depletion; wood utilization; renewal, tending, and protection; etc.) contains a discussion of actual results, trends, and conclusions and recommendations.
Description of Trends and Issues	As above
Achievement of Management Objectives	This aspect of the RPFO's is also well done. Discussions on the achievement of management objectives show good consideration. They tend to be richer for the production-based objectives, but this is because they were more quantitative than were objectives for environmental quality and integrated resource management.
Comparison of forest condition at start and end of plan	Not addressed as the data for the indicators mandated for use in this comparison by the FMPM were not collected at the start of the plan period.
List of Amendments and explanations for their frequency	The amendment master list is included in the RPFO's as an appendix in each document. The body of the RPFO's include a summary of the amendments and explanations for their occurrence.
Summary of Independent Forest Audit Results	The discussion of the previous IFA is rather brief, including only reference to the fact that the audit concluded that management of the forest was sustainable, and a verbatim list of the previous audits recommendations and suggestions.
Explanation and Conclusions	Explanation of the trends and deviations of actual performance compared to planned is very good. Brief conclusions are presented
Incorporation of Conclusions and Results into present FMP	Although not explicitly identified as such, there is evidence of the conclusions and findings of the RPFO's in the FMP's objectives and strategies.



# 3.7 ACHIEVEMENT OF MANAGEMENT OBJECTIVES AND FOREST SUSTAINABILITY

The IFAPP directs the Audit Team to assess the sustainability of forest management using a methodology described in the IFAPP. The IFAPP states that "Compliance with the applicable criteria [of the IFAPP] will determine whether the forest unit complies with the general principle of sustainability." The field observations of the Audit Team are also to be considered in assessing sustainability. Section 3.7.1 assesses the extent to which the objectives of the 2001 FMP were achieved during the audit period. Sections 3.7.2 and 3.7.3 review the information in the Comparison and Trend Analysis and RPFO, respectively, while section 3.7.4 presents our conclusions regarding sustainability.

## 3.7.1 Achievement of Management Objectives

The Audit Team reviewed the extent to which objectives set out in the 2001 FMP were achieved – an assessment of each objective is shown in Table 14. The overall assessment is that the Company's objectives generally achieved their planning direction as described in the FMP. Many of the objectives were very broad, others were very qualitative, and still other objectives pertained to conditions that the forest was to reach in 100 years. Objectives of these sorts could not be meaningfully assessed. Other key objectives, such as the harvest volume objective and associated targets, were only partially met, since the average annual harvest area and volume were roughly 60% of planned.



Table 14. The Audit Team's Assessment of the Achievement of Goals and Objectives of the 2001 FMP.

Goals/ Objectives	Achievements	Explanation
	Forest Diversity	
Broad Forest Diversity Objectives:  Ensure that the current biological diversity of forests is not significantly changed and where desirable and practical, is restored to reflect the pre-settlement forest.  To maintain the genetic diversity of tree species.  To maintain ecological function and processes.	Table FMP-5 of the 2006 FMP shows that preferred habitat area for most indicator species increased during the term 2001-2006. Habitat area for 3 of the 17 indicator species declined (red-backed salamander -1%, ruby-crowned kinglet -13%, and ruffed grouse -37%). The 2006 FMP attributes kinglet habitat decline to the fact the small area of habitat makes even the small decline seem proportionately large. The ruffed grouse decline is attributed mostly to inventory update rather than a change in habitat per se.  Tr a species genetic integrity maintained by using only seed stock from the appropriate seed zones and the use of natural regeneration.  Maintenance of ecological function and processes is too broad an objective to assess meaningfully.	
Wetlands Objective To protect and /or enhance the pattern and function of wetland ecosystems.	Wetlands protected through implementation of riparian guidelines.  Wetlands enhanced through undertaking several collaborative projects with Ducks Unlimited.	
<ul> <li>Old Growth Objectives</li> <li>To contribute to the provincial targets for the protection of old growth pine stands.</li> <li>To increase the area over time (4421 ha by 2101) from present levels (34 ha) the amount of old growth Pr/Pw (PR2 and PW1 FU area older than 121 years)</li> </ul>	2006 FMP predicts that approx. 18,000 ha of PW1 and PR2 will exist on the forest by 2096.  Old growth conditions in the normal forest are protected by tree marking.	This objective does not reflect active management of the forest. None of the forest areas mentioned in the objective are the subject to management activities, so the Company's

Goals/ Objectives	Achievements	Explanation
over the MU on Crown Unmanaged (OLL lands), Crown Parks, Crown Managed Protection Forest and Crown Managed production forest reserve exclusions.		actions are not influencing the attainment of the objective. See Section 3.3.6 for a fuller discussion.
Genetic Diversity Objectives: Genetic Diversity 1 – to protect and conserve the genetic diversity of indigenous tree species (e.g. Ow, Sr, Pj) Genetic Diversity 2 – Maintain current area of HE1 forest unit (8800 ha for all forest types; reserve and available) (area netted down to reflect roads and landings constructed by term 4 as modelled). N.B. The HE1 FU modelled as a selection silviculture express in area (This is a limitation).	The first listed objective has no measurable target; the objectives for HE1, PJ1, and red spruce were met. There is a heavy reliance on natural regeneration harvest systems, which promotes retention of local genetic material. Seed collections are taken locally and known populations of rare indigenous species (e.g. red spruce) are protected.  This HE1 objective was achieved because only a	
system cannot increase in area (This is a limitation of the SFMM computer model.) Genetic Diversity 3 – Maintain current area of PJ1 forest unit (54.0 ha Protection Forest Reserve) until 2051. Genetic Diversity 4 – To increase the amount of red spruce by 5.0 ha/year.	small proportion of the Hemlock unit was harvested. As a long lived species, it will maintain its presence. Hemlock is a key wildlife species and should be part of the objective to increase overall conifer.  Successful planting of 9,812 red spruce trees occurred in 2002-03.	
General Landscape and Forest Level Diversity  Dipiective:  To maintain and restore over time the representative orest types and patterns of the management unit.	The 2006 FMP does not seek to restore forest units to their historic levels. Nonetheless, some direction is consistent with this – area of pines is forecast to increase and area of intolerant hardwoods to decrease.	
Landscape and Forest Level Pine Objective: Maintenance of a minimum of the current area (31 740 ha – all forest types; reserve and available) of PW1/PR2 forest unit area over time and target an increase of 5% (1,587 ha) by 2101.	The 2006 FMP did not report the area by age class in the Crown Unmanaged part of the Forest, and so it was not possible to see how the relevant landbase changed from 2001 to 2006. However, on the Crown managed landbase, the production forest area of the two pine forest units increased from 27,773 ha to 31,433 ha between 2001 and 2006.	The Audit Team had difficulty calculating the basis for the area numbers used in the objective; it appears to equal the area of production and protection forest on the Crown Managed and Crown Unmanaged Landbases.

Goals/ Objectives	Achievements	Explanation
Landscape and Forest Level Red Oak Objective: Maintain, where possible and allow for a 15% decrease in # of ha of OR1 FU area over time from the current area (all forest types: reserve and available) of 36 795 ha (Bancroft 22,093 ha and Minden 14,702 ha). This strategy recognizes that red oak is currently at peak abundance because of local fire history and may occupy some sites which it may not well be suited to over the longer term.	The OR1 area on the Crown managed available production forest landbase decreased from 19,688 ha in 2001 to 17,912 ha in 2006, a 9% decrease. This is within the range identified but is a significant proportion of the 15% maximum reduction.	
Landscape and Forest Level Tol Hwd Objective: Maintenance of a minimum of the current area (all forest types: reserve and available (87321 ha) of HD1/HD2 forest units area over time less) (area netted down to reflect roads and landings constructed by term 4 as modelled.).	The assessment of the objective is hindered by the lack of requisite data presented in the 2006 FMP, however the area of available Crown managed land in these two forest units declined from 97,100 ha in 2001 to 87,700 ha in 2006, which suggests the objective is not being met.	The HD2 Forest unit was no longer identified in the 2006 FMP – the area that would have qualified as HD2 was included in the HD1 FU.
Landscape and Forest Level Diversity Objective: To protect natural heritage values.	This objective is too vague to assess in-depth. There is no serious environmental degradation attributable to forest management activities.	
Landscape and Forest Level Diversity Objective: To protect and conserve the soil and aquatic resources, forest and wildlife resources as well as their biological foundations to ensure the long term health of ecosystems.	Soil resources are protected through use of guidelines to protect physical environment.  Although some site damage was noted during the audit, the instances were rare, and no systemic issues were apparent.  Aquatic resources are protected through use of fish habitat guidelines.	
Landscape and Forest Level Diversity Objective: To maintain the existing forest condition excepting that there should be an increase in the PW1/PR2 forest units given current provincial policy and affordability and/or resources from Forestry Futures or other potential sources.	This objective is conditional on the availability of funding – as noted above, the area of available Crown managed land increased by 9% from 2001 to 2006.	
Landscape and Forest Level Diversity Objective: To increase where, practical and necessary, the proportion of under-represented tree species and forest units, which would naturally be more abundant, and to maintain a range of native species within and/or	It is not clear which species or landbase this was meant to apply to. White and red pine forest unit area did increase on the managed Crown production forest, while hemlock working group area declined from 9,350 ha in 2001 to 6988 ha	The 2001 FMP identifies white and red pine, hemlock, spruce and balsam fir as species that were formerly more abundant. Balsam fir fluctuates in part due

Goals/ Objectives	Achievements	Explanation
between forest stand in the Management Unit.	in 2006. Spruce area was constant while balsam fir working group area declined by 700 ha. Table 1 of the Trend Analysis indicates that the area of yellow birch working group declined from 199 ha to 161 ha from 2001 to 2006. However, the Audit Team saw evidence of efforts being made to increase under-represented species.	to budworm infestations and is likely not a species of interest to this objective.
Future Forest Condition Objective: To move to a more natural disturbance pattern with an increase (by 5% over time to term 2101) from the current area of conifer forest cover (65178 ha – PW1, PR2, CM1, CE1, HE1, PJ1, and OC1) available and	We determined that the 5% increase over a 100 year period translates to approximately 30 ha per year (5% of 65,178 ha = 3,000 ha / 100 years). This target has been met.	We examined several pine stands that have been measurable progress towards this.
reserved forest unit areas) with an allowable decrease (by 5% over time to 2101) from the current area of intolerant hardwood and mixedwood forest cover (103637 ha - MW1 and INT1 available and reserved forest unit areas).	SFMM analysis from 2006 FMP predicts that the conifer forest units will comprise 99,700 ha of the forest in 2096. MW1 and INT1 are projected to comprise 59,900 ha.  Present conifer restoration silviculture projects are contributing to the objectives. The Company makes good use of Forestry Future Trust funding to accelerate natural processes. The Company is applying appropriate silvicultural techniques and SGRs.	Overachievement of conifer targets is at the expense of a significant decrease in the hardwood/mixedwood forest units. The projected level of conifer on the forest is consistent with the direction of the historic forest.
	Social and Economic	
Broad Social and Economic Objective: To provide society with a sustainable harvest of forest-based material and social values while maintaining the ecological and productive capacity of the forest and cultural values.	This is too broad an objective to assess meaningfully.	The 2006 FMP contained a similar broad objective.
<u>Timber Production Objective</u> : To provide a continuous, economical, and stable annual supply of suitable wood to the forest industry, and to upgrade the quality of the forest products derived over time.	This is also a broad target – not all of the wood supply is economical, since stand improvement funding is required to harvest some stands, and others were simply by-passed. The quality of timber is increasing gradually over time – this is a long-term objective.	The 2006 FMP contained a similar objective.

Goals/ Objectives	Achievements	Explanation
Timber Production Objective: To harvest a minimum of 191,000 m3/yr for the first two terms (20 years) but target a minimum of 165,000 m3/yr over the remainder of the harvest horizon. The volume target is broken down by species groups and products as follows and was derived from the anticipated demand figure calculated by the Ministry of Natural Resources Regional Office. The minimums are the anticipated demand figure for first two terms and the minimum amount identified in the SFL business plan for the remainder of terms (191,000 m3/yr):  1. PW/PR – 28,800 m3/yr 2. SPF – 4,100 m3/yr 3. Tol Hwd – 90,600 m3/yr 4. Po/Bw – 67,300 m3/yr 5. Other Conifer – 200 m3/yr  Specific harvest area targets are based on planned allocations.	The target of 191,000 m3/yr comes from the SFMM analysis, and was not met over the 2001-06 period. The average harvest volume was approximately 150,000 m3/yr over the first four years of the audit period (only years for which data are available). This consisted of:  Pw/Pr = 15,600 m3/year SPF = 6,400 m3/year Tol Hwd = 60,000 m3/year Tol Hwd = 60,000 m3/year OC = 1,600 m3/year It is evident that the major area of underachievement is the tolerant hardwoods, with a significant under harvest in the red and white pine volumes, as well. (Figures above include salvage harvest volume.)	
Fish and Wildlife Objective: To manage human pressure on fish and/or wildlife populations.	Fishing and hunting are controlled on the forest by the MNR's management programs. Access management is a major source of issues at present, especially with respect to ATVs and, to a lesser extent, snowmobiles.	
Fisheries Objective: To protect and /or enhance habitat for the continued perpetuation of fish species for the people of Ontario for their sustained use for food, employment (e.g. baitfish, commercial guiding), recreation (e.g. fishing), education and ecological value/role by managing forest cover for the protection and enhancement of fish habitat, while maintaining forest sustainability.  Wildlife Objective: To provide socio-economic opportunities dependent on existing wildlife species for the people of Ontario for their	Fish habitat is protected through the use of the fish habitat guidelines.  There is no measurable achievement assigned. In general forest cover is managed, and through the management process there is a genuine "goal" of sustainability. In that regard this "objective" is met.  This is a copy of the fisheries "objective.", and like it, is a general objective that is difficult to evaluate. AOC prescriptions were appropriate	

Goals/ Objectives	Achievements	Explanation
sustained use for food, employment (e.g. guiding and trapping), recreation (e.g. viewing, hunting), education and ecological value/role by managing forest cover for the protection and enhancement of wildlife habitat, while maintaining forest sustainability.	and adhered to in operations, and the Company had good relations with most stakeholders.	
First Nations Objectives: To support opportunities for First Nations communities for economic development via forest resources and forest-based uses while maintaining forest sustainability and considering existing uses and commitments.  To protect cultural and spiritual values.	Algonquins of Whitney are indirect shareholders in BMFC, through their participation in the Bancroft Forestry Company Limited (BFCL) (the independent loggers). The Algonquins participated in the allocation process in the same manner as all other members of BFCL. No issues were raised by the Algonquins regarding allocations. Also, members of the Algonquins of Whitney and Golden Lake undertake silvicultural work and some First Nations people work for logging companies and local sawmills. Algonquin communities provided valuable input into the 2006 FMP process.	Without baseline information or targets, it is difficult to assess the extent of progress in providing economic opportunities to First Nations communities.
Tourism / Recreation Objective: To work co-operatively with tourism and recreation interest groups to ensure that quality tourism and recreation opportunities (i.e. hiking, fishing, canoeing, cross country skiing, snowmobiling, hunting, wildlife viewing, camping, scenic viewing, remote backcountry experiences) exist, while maintaining forest sustainability.	The Company had a good relationship with tourism and recreation stakeholders and many AOC's protected relevant values.	
Value	s Dependent on Forest Cover	
Broad Objective for Values Dependent on Forest Cover: To plan and implement forest management to protect and maintain the natural values dependent on forest cover while achieving sustainable use of the forest resources, and maintaining overall forest sustainability.	This objective is too broad to assess concisely.	
VTE and Extirpated Species Objective: Identify, protect and provide preferred habitat for vulnerable, threatened,	Both the 2001 and 2006 FMPs contain specific strategies for the protection of VTE. The	

Goals/ Objectives	Achievements	Explanation
endangered or extirpated species (e.g. wood turtle nesting habitat).	strategies rely on the use of the MNR's guides. The MNR staff have made a considerable progress in developing and implementing a prescription for Wood Turtles. Effectiveness is being assessed currently.	
Water Resources Objectives:  1) Protect headwater and headwater flows, telluric (lateral flow of water through the soil) flows, and surface drainage for downstream protection of trout waterbodies, cool and warm water environs, and terrestrial environs.  2) Protect or improve the forest cover for its cooling effect on water;  3) Enhance the conifer representation (by 5% over time to term 2101) from the current area of conifer forest cover (Bancroft 39,305 ha; Minden 25,873 ha – PW1, PR2, CM1, CE1, HE1, PJ1, and OC1).	The use of the Fish Habitat Guide and careful logging practices are intended to address the first two objectives.  Conifer restoration has increased the area of red and white pine, but impacts of efforts have not shown up yet in hemlock, jack pine, or cedar, as shown in Table 1 of the Trend Analysis.	The lack of quantitative targets for the first two objectives makes them difficult to assess.
White-Tailed Deer Objectives:  1) To provide summer range habitat for white-tailed deer across the landscape above the minimum of 4221 ha (Bancroft sub-unit) and 1879 ha (Minden sub-unit).  2) To provide continuing mast producing capability (beech and oak) for fall range, for white-tailed deer and other wildlife species;  3) To contribute to the average target of 20 kg/ha of current annual growth of preferred browse species in areas adjacent to suitable conifer cover within deeryards;  4) Maintain and/or increase suitable conifer cover within deeryards over time.	1) SFM Model output indicates that the forest cover target is met within the bounds of natural variation. 2) Tree marking prescriptions require allowance for mast trees, and there was field evidence this was occurring. 3) Browse growth is not monitored. 4) Deer yard prescriptions were examined and implementation was occurring. Overall, given the success of the deer population there is empirical evidence there is not a winter food shortage.	
Moose Objective: To provide moose preferred summer thermal, fall and early winter habitat above the lower bound of natural variation (2,838 ha (Bancroft) – 1,426 ha (Minden); 6524 ha (Bancroft) - 3,153 ha (Minden); and 33,442 ha	SFM Model output indicates that the forest cover target is met within the bounds of natural variation.	

ievements Explanation
woodpecker guidelines is he objective. The re projected to be attained
through the application of scriptions and the practice sites by tree-markers and odelling predicts the habitat ined. Known nest sites are ormation could be of tree markers and forest that obvious nests should erations.
through the use of relevant scriptions. MNR and ied new nests while doing ince inspections, etc.
s to protect den/cavity trees ng guide for tolerant to provide suitable nest e targets are projected to be odelling
nplementation of fish habitat n NRVIS information. The ut spawning and nursery
ough im

Goals/ Objectives	Achievements	Explanation
General Objective: To ensure that all harvested lands are regenerated to the appropriate species (based upon site, biodiversity and desired future forest condition objectives) and tended until free-to-grow, using cost effective methods to achieve the desired future forest condition.	The Company minimized logging damage and a maximum of 2% was lost to roads and landings.  The renewal rates were maintained at a level sufficient to fund the renewal program.	
Renewal and Tending 1: The following targets for forest renewal and tending are the requirements to meet the renewal and tending of stands harvested in the past, as well as those selected for harvest in the selected management alternative in the term of this plan. These activities are detailed in Table FMP-25.	Renewal and tending targets included a significant amount of additional area that, at time of planning, had not been assessed in sufficient detail to make a final determination of the most appropriate treatment. While 60% of the planned harvest area was cut, actual site preparation area was 30% of planned and planting was 50% of planned. More than 100% of the planned tending and stand improvement area was treated. Objectives were essentially met.	
Renewal and Tending Targets: Naturally regenerate 13,900 ha through the application of shelterwood, selection and clearcut management techniques and to artificially regenerate 1167 ha by planting approximately 1 447,500 trees during the five-year term and to site prepare 1,300 ha using manual, chemical, or prescribed burn methods during this same period. The tending target is to maintain 7,252 ha of existing stands or plantations through the application of manual, chemical or prescribed fire cleaning treatments, or by performing thinning and improvement or pruning operations.	Roughly 10,700 ha were harvested by these three harvest methods, and an additional 5000 ha of stand improvement work was conducted. Artificial renewal was 500 ha, but level of tending was 97% of planned. Stand improvement activity exceeded planned levels by a few percentage points.	
Renewal Research Objective: To continue to research, test and implement viable, economical, and ecologically-based alternatives for forest renewal and tending.	The Company was able to ignite a prescribed burn and was refining its harvesting and renewal approaches throughout the plan period. These were not undertaken as formal research projects, however.	

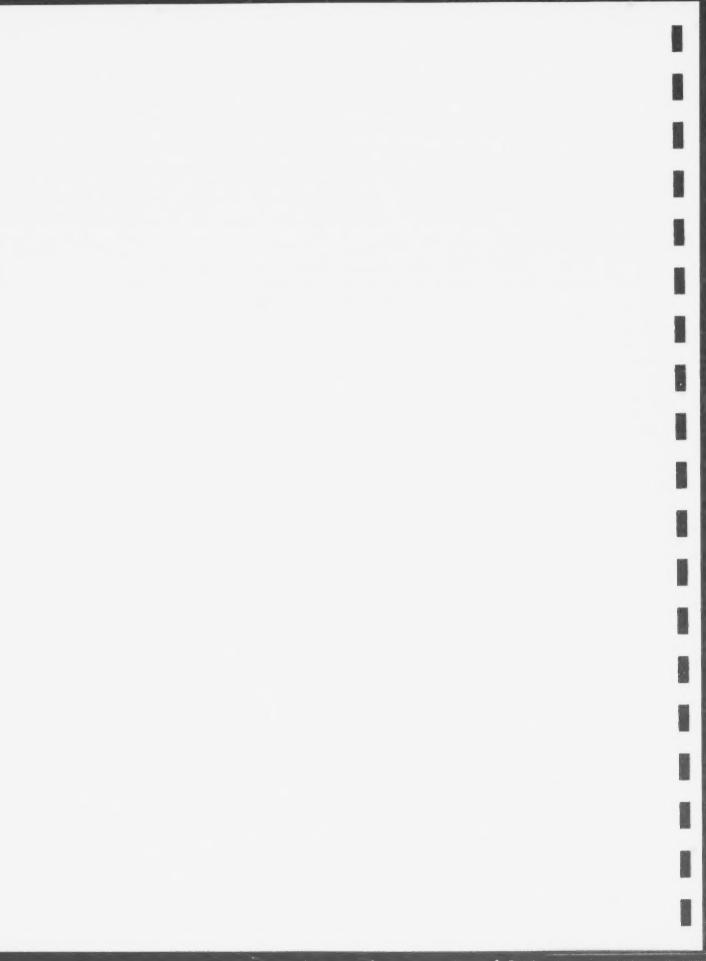
#### 3.7.2 Review of RPFO Assessment of Sustainability

The assessment of sustainability in the RPFO's is brief, noting that many of the FMPM based indicators of sustainability could not be evaluated because the necessary data were not collected during the periods covered by the RPFO's and the modelling requirements related to the indicators came into effect after the FMP terms covered by the RPFO's. Nonetheless, the RPFO's attempt to assess sustainability based on the information available.

In general, the RPFO's conclude that an assessment of sustainability cannot be based on the short period of time covered by the documents, but that information covering several plan terms is needed for an insightful assessment. The Audit Team concurs with this perspective. Nonetheless, to fulfill the requirement of the RPFO's, they do conclude that "the present management direction is sustainable when adequate funding is available for required silviculture work".

The conclusions and discussions of the RPFO's related to the FMPM's indicators of sustainability are summarized below:

- Biodiversity/Clearcut size The RPFO's both note that clearcut sizes on the former
  Crown Units were small generally less than 100 ha, and this size range is consistent
  with the emulation of blow-down patches and other natural disturbances. The 19962001 FMPs did not contain a suggested frequency and area distribution for clearcuts
  as it was not a requirement for those plans.
- Net Primary Productivity and Water Yield –Not required in the 1996/2001 plans.
  The RFPOs note that the percentage of partial cutting systems used on the Forests plus the use of reserves around water bodies ensures the maintenance of water quality and water conservation.
- Total Crown Productive Forest The RPFO's note that although there was a small
  decrease in the total productive forest area of the Bancroft Minden Forest compared
  with the sum of productive forest areas from its two predecessors, the decrease is
  small and not significant enough to affect the sustainability of the forest a whole. The
  documents note that the difference is probably related to preparation of the planning
  inventory rather than to any change in forest area per se.
- Available Harvest Area Utilized The RPFO's note that only 57% of the AHA was
  utilized in the 1996-2001 term for the Bancroft Unit, and 78% for the Minden Unit.
  This is attributed mostly to the low utilization of pulp-quality wood. Although less
  than desirable, the documents conclude that these levels of utilization do not pose a
  threat to sustainability.
- Habitat for Selected Wildlife Species The RPFO's conclude that use of the existing
  forest management guides and appropriate stand-level prescriptions provides habitat
  for selected wildlife species. See section 3.3.6 of this report for an expression of the
  Audit Team's concerns regarding the manner in which wildlife habitat is safeguarded.



- **Soil and Water Conservation** The RPFO's conclude that use of riparian reserves identified in the 1996-2001 plans as directed under the Fish Habitat Guide serves to protect water quality.
- Silvicultural Budget The RPFO's note that the formation of the Forest Renewal
  Trust Fund and the Forestry Futures Fund, providing dedicated funds for silviculture
  activities, ensure that adequate money is available for conducting silviculture work.

# 3.7.3 Review of Trend Analysis of Planned versus Actual Forest Operations

The Company prepared two separate Trend Analysis Reports for this IFA, one for each of the two predecessor Crown forest management units. These reports are included in this report as Appendix A. The Trend Analysis is expected to cover the current plan term as well as the two previous complete plan terms. The Trend Analysis reports both cover the period from 1990 to the 2001 FMP period. Since there are histories of management unit amalgamations and contingency plans that needed to be considered, the Reports required considerable analysis.

The Minden Crown Management Unit, one of the two units merged to form the Bancroft Minden Forest, was itself managed as two separate CMUs between April 1, 1990 and March 31, 1996. These two CMUs were merged to form the Minden CMU, which was managed according to a TMP that ran from April 1, 1996 to March 31, 2001. The current Bancroft Minden FMP is the third plan period covered in the Trend Analysis. The Bancroft CMU was, like the Minden CMU, the product of a merger effective April 1, 1996. The two preceding management units were managed separately between April 1, 1990 and March 31, 1996, and the Bancroft CMU was managed as a single entity between April 1, 1996 to March 31, 2001.

The reports prepared for the two CMU's are among the best Trend Analysis reports that this Audit Team has encountered. The analysis is complete and thorough, and major trends are identified where they are evident. The reports present separate analysis and result tabulation for the two CMUs separately, as is required, but they also present combined results to facilitate comparisons with the current SFL area and the 2001 FMP. Because the Bancroft and Minden units were managed in a similar manner and have similar forest types, there are few distinctions between the CMUs regarding the events of the past 15 years. The major difference is that in the mid-1980's, the Minden Area forester undertook a thorough analysis of the forest and netted down the available landbase to remove low quality, inaccessible, and otherwise unavailable areas. In the 1996 plan, the poplar and even-aged maple forest units were declared surplus and, largely as a result of this, the actual harvest achievements as a percentage of planned were in the 80% range, compared with the 60% level of achievement in the Bancroft CMU.

The Trend Analysis reports indicate the following major trends:

 The area of Crown managed productive forest has declined by 36,600 ha, or 12%, from 1990 to 2001 due primarily to the shifting of land into parks and reserves;

- The Crown managed production forest landbase, which excludes areas with shallow soils, steep slopes, islands and other sensitive areas, increased from 245,814 ha in 1990 to 260,161 ha in 2001, due to the reclassification of land from the protection forest category to production forest;
- The planned harvest areas have declined from 7,179 ha in 1990 to 3,669 ha in 2001, due to a number of factors, including the landbase reductions and changes to silvicultural approaches;
- The planned harvest volumes have also declined from 260,720 m<sup>3</sup>/yr in 1990 to 227,422 m<sup>3</sup>/yr in 2001, which is a lower proportional decline than occurred for the planned harvest area;
- Actual harvest area and volume as a proportion of planned has generally increased over the review period;
- Actual harvest volume has increased from 141,400 m³/yr in the 1990 TMP period to 150,900 m³/yr in the first four years of the 2001 FMP period, while actual harvest area has declined from 3,400 ha/yr to2,400 ha/yr;
- Harvested areas have had renewal treatments applied, with the changes in silvicultural approaches changing the areas treated by different means;
- Assessment of silvicultural success has been well below planned and covered roughly 15% of the area cut under even-aged management between 1990 and 1996 (and none of the area cut under uneven-aged management) which is at the age where it is ready to be assessed; and
- Of the areas assessed for renewal success, 73% have been declared successfully renewed.

The reader is encouraged to review the Trend Analysis reports in Appendix A to obtain a more complete discussion of the points summarized above.

These trends indicate that the forest is being managed sustainably on the whole. The continued removal of land from being available for harvest to reserve status reflects broad social values, but at the same time it is in theory constraining to the forest industry. This concern must be balanced by the increase in harvest volume during the review period, which suggests that the capacity of the forest industry using the BMF was below the level where the available timber volume would be fully used. However, should the available landbase continue to shrink, it would lead one to question the sustainability of the current forest sector.

The indicator of greatest concern is the low level of renewal assessment. It is reasonable that the uneven-aged stands, managed by the selection system, are not assessed for renewal, since growing stock of all size classes remains on site. However, the areas managed by even-aged systems are renewed by either natural regeneration or planting. Generally, natural renewal of intolerant hardwoods will occur without problems, and the natural renewal of mixedwood sites is also likely to proceed without concern. However, renewal of planted areas and shelterwood harvest areas (some of which are planted and others where natural renewal may be attempted, followed by planting or other measures if natural regeneration is not successful) can be uncertain. Table 6 of the Trend Analysis indicates that during the 1990 TMP period, 366 ha/yr was harvested using shelterwood

(all on the Bancroft part of the Forest) and was to be naturally regenerated, and 289 ha/yr was planted (on the present Bancroft Minden Forest), for a total of 3,930 ha planted and renewed naturally under shelterwood during the 1990 – 1996 period. With only 853 ha assessed, this is a low proportion of the assessment that should be undertaken.

The Trend Analysis notes that the previous IFA recommended that the Company increase its level of FTG assessments, and that this has happened, so that future Trend Analysis reports should show much better results in this area. Because this audit has confirmed that this has happened, the auditors conclude that the Trend Analysis reports support the notion that the Forest is being managed sustainably.

#### 3.7.4 Conclusions Regarding Sustainability

The assessment of the achievement of plan objectives, and the assessments of sustainability in the RPFO and Trend Analysis reports identify a variety of trends and shifts, but they do not indicate that there are threats to sustainability.

In the context of sustainability, the points from these reports that caught the attention of the Audit Team are:

#### Area of Crown Managed Forest

The area of Crown managed forest has declined by roughly 18%, or 62,000 ha, but the changes have been due to the creation and expansion of parks. During the 1990-2001 period, inventory revisions reduced the area of protection forest from 60,000 ha to 10,000 ha, and the area of non-productive forest from 55,000 ha to 28,000 ha. The two inventory revisions affected 77,000 ha of land – 62,000 ha of this area was moved to parks and the remaining 15,000 ha became Crown managed production forest 17, which rose from 245,000 ha in 1990 to 260,000 ha in 2001. None of these changes reflect the conversion of forest to non-forest.

#### Planned Harvest Area and Volume

The planned harvest area has declined by almost 50% from 1990 to 2001, while the planned harvest volume declined by 13%, from 260,000 m³/yr to 227,000 m³/yr. The decline in planned harvest area reflects to some extent the 18% reduction in the managed forest landbase, but other factors such as changes in forest management guidelines and reserves, changes in management prescriptions, and other factors account for the larger part of the reduction. The forest area by working group stayed quite constant during the period, ruling out changes in forest cover as being a cause of the reduction in planned harvest area. Planned harvest volume was affected by many of the same issues that affected planned harvest area, but was offset by increases in estimated growth and yield, as well as increases in utilization.

#### Actual Harvest Area and Volume

The actual harvest area declined from 3,400 ha/year to 2,400 ha/year, which represented an increase in the proportion of planned harvest area actually cut. The actual volume

<sup>&</sup>lt;sup>17</sup> Crown managed production forest is the landbase that is available for forest management.

harvest increased from an average of 141,000 m³/yr to 151,000 m³/yr. This reflected increased yields, which rose from 43.4 m³/ha in the 1990-1996 period to 59.7 m³/ha in the first four years of the 2001 FMP period, which is a 37% increase. This reflects improved harvest technology, better markets for species such as poplar, white birch, and perhaps low grade hardwood, and different prescriptions.

These trends are consistent with sustainable forestry, since an increased harvest is being taken from a smaller harvested landbase, while at the same time changes in guidelines are requiring increased ecological reserve areas and residual trees.

In addition, the Audit Team found that:

- the forest management plan was prepared according to the requirements of the FMPM;
- many of the goals and objectives of the 2001 FMP were achieved, although a number were too general to assess;
- the forest is being managed according the forest management guides of the MNR;
- the application of AOC reserves around certain types of values was done well and coverage of values was very good;
- harvest and renewal are in balance, and renewal funding is adequate;
- the Company has good relationships with stakeholders;
- the LCC is active and effective; and
- the Company and MNR staff are dedicated, professional, and very knowledgeable.

Accordingly, the Audit Team concludes that the managed Crown land portion of the Bancroft Minden Forest was managed within the bounds of sustainability during the audit period.

The two areas where the Audit Team feels the greatest future risks to sustainability lie are:

- the reliance on parks for the delivery of a substantial amount of the ecological values such as old growth and some types of wildlife habitat. The reservations of the Audit Team were described in section 3.3.6 and Recommendation # 9 was issued in response to this concern; and
- the difficulties in managing access; issues related to access management on the forest, and potential negative environmental and social impacts, were discussed in section 3.3.6; Recommendation # 10 and Recommendation # 11 were issued in an effort to contribute to a solution of this vexing problem.

However, these issues do not trigger immediate concerns with sustainable management of the forest.

#### 3.8 CONTRACTUAL OBLIGATIONS

This section of the report discusses how well the Company met its various contractual obligations, as stipulated in the SFL and legislation.

#### 3.8.1 Payment of Crown Timber Charges

A request was submitted to Corporate MNR to search the Crown charges database to determine whether all licensees were up to date in their payments of Crown charges, including dues and payments to the Forest Renewal Trust Fund. As of April 30, 2006, five licensees were overdue payment. A total of \$14,960.22 worth of Crown dues and \$3,262.70 of Forest Renewal Trust Funds were identified as being overdue.

Bancroft MNR has in place a tracking system that provides outstanding balances on a monthly basis. In accordance with MNR's Guidelines for Accounts Receivable, the District follows a "progressive account management" approach which involves sending letters at specific junctures to remind account holders of overdue accounts, and to request payment. If the situation persists, the MNR and Company will work together to solve the problem. MNR reported that there are very few occurrences of long-standing overdue accounts among the Bancroft Minden licensees. This is another example of the benefits of a good working relationship between MNR and the Company.

During the audit week, the Audit Team review records held by MNR Bancroft, consisting of trial balances for each a) Regular Stumpage (Crown dues), and b) FFT and Royal Trust. Both balances are recorded by territory not Management Unit, so there is some overlap with other SFL forests and the resulting totals are somewhat ambiguous. The current balance during the week of the field audit showed that the regular stumpage was currently over-paid, but there was an outstanding balance on the FFT and Royal Trust account. Neither amounts were excessive, and both MNR and BMFC were aware of the situation.

#### 3.8.2 Renewal

The roles and responsibilities of keeping inventories, and monitoring and reporting is continuing to evolve. Over the term of this audit, BMFC has met its obligations, but the Audit Team has recommended that a more systematic format be followed with silvicultural monitoring and reporting in the future. Over the term of the audit, BMFC has met its responsibilities with respect to the X, Y, and Z lands.

# 3.8.3 Forestry Futures Trust

The Forestry Futures Trust has provided considerable funding to the BMFC for work on the Forest. During the first four years of the audit period, the Annual Reports identified that \$1.1 million has been provided by the Trust to BMFC for a variety of projects.

Ninety percent of the field inspection sites viewed by the Audit Team had work partially or fully funded by the Trust. The Company provided figures that showed \$420,000 had been spent on these sites; of this, \$125,000 was spent on hardwood stand improvement, \$92,000 was spent on the prescribed burn at Fish Lake in Dickens Twp. and \$70,000 was spent on manual tending.

The Audit Team verified that all activities which were identified as having taken place on the sites viewed actually did take place. The draft Specified Procedures conducted by KPMG on the Bancroft Minden Forest for 2005 identified several invoices for work that should have been paid by the Forestry Futures Trust that were inadvertently charged to the Forest Renewal Trust – the necessary corrective procedures have been undertaken.

#### 3.8.4 Wood Supply Commitments

The SFL does not identify any wood supply commitments that are to be met.

#### 3.8.5 Monitoring Obligations

The Company performed FTG assessments on 7,637 ha in the first four years of the audit period, of which all were FTG and 7,444 ha regenerated to the planned forest unit. These areas included hardwood selection harvest areas, which are assumed to remain FTG immediately after the harvest is completed.

FMP-28 indicated that 17,056 ha would be assessed during the 2001 FMP period, including 9,176 ha of hardwood selection. The Company notes that the selection harvest areas are assessed in order to provide a post-harvest description of the stand for the inventory update.

It is a condition of each Sustainable Forest Licence that: "All forest companies shall prepare a Forest Compliance Plan for planning, monitoring, reporting, and education/ prevention on its forest operations and those of overlapping licensees, to ensure compliance with all applicable legislation, regulations, the Forest Management Plan, and with Ministry manuals and guidelines affecting those operations." The terms of the SFL condition were met through the diligent preparation Five-Year Compliance Strategy (Plan) and the Annual Plans of Action (Schedule). We found the plans to be specific in describing ongoing issues, and provided specific remedies. Approval dates appeared in order, although in many cases the copies of documents were not signed. Verification required tracking down the originals. There are some areas for improvement, described above in a recommendation in section 3.3.

#### 3.8.6 First Nations Opportunities

The SFL directs the Company to work cooperatively with the Minister and local Aboriginal communities in order to identify and implement ways of achieving a more equal participation by Aboriginal communities in benefits provided through forest management planning.

As mentioned previously, Algonquins of Whitney are indirect shareholders and have received harvest licences on the forest. In addition, there have been opportunities provided in silviculture and a number of First Nations people work for forest products companies and contractors. However, the Audit Team did not feel that the Company was especially pro-active in looking for additional opportunities to provide opportunities to First Nations, and Suggestion # 7 is intended to encourage greater creativity in this regard.

#### 3.8.7 Previous Independent Forest Audit

Previous audits for the Bancroft Minden Forest include a Bancroft IFA done in September 2001, and a Minden IFA done in October 2001. Each of these had an action plan developed to respond to recommendations and suggestions. Each also had a status report prepared prior to this Audit. Generally, BMFC and MNR have acted to meet these recommendations, although in some cases there is additional effort required to fully comply with the recommendation.

**Table 15.** Review of the implementation of recommendations made in the 2001 Bancroft Independent Forest Audit.

	Recommendation	Actions Taken	Status
1.	MNR and the Company must ensure that future planning teams document and retain records of their discussions.	Terms of reference for the planning team for the 2006 FMP stipulated that the planning team should record and distribute minutes of its meetings.	Abundant minutes have been provided from the 2006 FMP development process – recommendation appears to have been met.
2.	The Company and MNR must develop a strategy to address the high proportion of planned allocations that are not harvested.	The Company will continue to participate in initiatives aimed at attracting interest in utilizing the timber in the forest and region that currently has few or no markets. The Company will monitor and annually report to its shareholders on progress towards full utilization of the harvest and will report on by-pass in the Annual Reports.	The Company has improved its utilization but has significant room for improvement. No similar recommendation was made in this IFA.
3.	The Company should carefully assess site conditions for opportunities to optimize the use of available funding to meet renewal objectives and minimize unnecessary site disturbance.	The Company will conduct an analysis of current renewal practice for pine shelterwoods to examine the costs and benefits of alternative approaches and will continue to explore less intensive methods of site preparation and scarification. Barrels and chains trials have been initiated but not yet evaluated.	The Company is meeting renewal objectives and site disturbance was minimal on the whole, with mitigation where required.
4.	The Company must ensure that Forest Operations Prescriptions contain, where appropriate, detailed provisions for the management of midtolerant species and that	The Company will ensure that Forest Operations prescriptions describe provisions for the management of mid- tolerant species where appropriate.  Tree marking audits will check to ensure that these prescriptions are implemented.	Pre-commercial thinning of 70 ha of young yellow birch regen completed, Forestry Futures funding obtained for intensive management of mid-

	Recommendation	Actions Taken	Status	
	these prescriptions are implemented.		tolerant hardwoods.	
5.	The Company must consider the management of all diameter classes in the development of Forest Operations Prescriptions for tolerant hardwoods.	Forest Operations Prescriptions will clearly identify management of all diameter classes down to 10 cm dbh in tolerant hardwood stands. Required changes have been made to prescription forms.	Company has met the intent of the recommendation.	
6.	The Company must ensure that Forest Operations Prescriptions correspond with the Silvicultural Ground Rules in the Forest Management Plan.	Forest Operations prescriptions will include the specific Silvicultural Ground Rule being implemented as identified in the Forest Management Plan.  Plan amendments will be prepared and submitted to MNR to address any gaps identified.	The Company has followed the recommendation.	
7.	MNR must develop feasible free-to-grow survey methods and regeneration standards for white pine that are consistent across the Great Lakes-St. Lawrence forest region and that provide reliable and representative results.	MNR developed Silvicultural Treatment Assessment and Reporting System (STARS) for partial cutting systems and the Free-growing Regeneration Assessment system (FRGA) for clear cut systems. Both systems are applicable to white pine renewal areas.  The Company and MNR will use the results reported in the annual report and MNR audits to evaluate the regeneration standards for the next FMP.	STARS and FRGA are suitable systems for meeting the recommendation.	

**Table 16**. Review of the implementation of recommendations made in the 2001 Minden Independent Forest Audit.

	Recommendation	Actions Taken	Status
1.	The Company must ensure that their Forest Operations Prescriptions contain, where appropriate, detailed provisions for the management of midtolerant species and that these prescriptions are implemented.	Forest Operations Prescriptions will identify on maps the locations suitable for implementing group selection silviculture in tolerant hardwood areas and provide direction to tree markers on marking priorities.  Paint application, as applied to groups will be changed so that marking auditors can readily identify where group selection is being implemented.	Actions during the period were directed towards use of group selection. There was progress made, and Recommendation # 16 is intended to provide further direction.
2.	The Company must consider the management of all diameter classes in the development of Forest Operations Prescriptions for tolerant hardwoods.	Forest Operations Prescriptions will clearly identify management of all diameter classes down to 10 cm dbh in tolerant hardwood stands. Required changes have been made to prescription forms.	Company has met the intent of the recommendation.
3.	The Company must ensure that operations are	Forest Operations prescriptions will include the specific Silvicultural Ground	The Company has followed the

	Recommendation	Actions Taken	Status
	completed in accordance with Forest Operations Prescriptions and Silvicultural Ground Rules.	Rule being implemented as identified in the Forest Management Plan.  Plan amendments will be prepared and submitted to MNR to address any gaps identified.	recommendation.
4.	MNR must implement a comprehensive system for storage and retrieval of wildlife resource inventory and values information at the Minden Area Office.	The District Manager will ensure that MNR responsibilities for the maintenance of the Natural Resources Values Information System (NRVIS) are met.	The system is working more effectively. Recommendation # 13 is intended to close the reporting loop.
5.	MNR must ensure that adequate monitoring of forest operations occurs and that inspections are documented.	Specific plans for forest operations inspections (FOIP) will be addressed in the Annual Compliance Operations Plan (ACOP) – Area Activity Schedule (AAS).  Each forest operation will be inspected at least once before activities are completed and more frequently where necessary.  In October 2004, a Senior Resource Technician was hired at Minden with compliance responsibilities.	The compliance system was judged to be working well, underpinned by the good working relationship between MNR and BMFC.
6.	MNR and the Company must ensure that free-to- grow surveys are completed as required.	Free-to-grow surveys must be completed to meet the requirements of the Forest Information Manual and the Silvicultural Effectiveness Monitoring Manual for Ontario (SEMMO).	As of the end of year 4 of the 2001 FMP period, 3,014 ha of non-selection harvest area had been assessed, and of these, 2,821 ha (94%) were declared FTG. This is about 80% of the actual harvest area in the 1990-96 plan period (excl selection).
7.	MNR must develop feasible free-to-grow survey methods and regeneration standards for white pine that are consistent across the Great Lakes-St. Lawrence forest region and that provide reliable and representative results.	MNR developed Silvicultural Treatment Assessment and Reporting System (STARS) for partial cutting systems and the Free-growing Regeneration Assessment system (FRGA) for clear cut systems. Both systems are applicable to white pine renewal areas.  The Company and MNR will use the results reported in the annual report and MNR audits to evaluate the regeneration standards for the next FMP.	STARS and FRGA are suitable systems for meeting the recommendation.

#### 3.8.8 Licence Conditions

The Company's SFL has four conditions in it – one is a requirement to make available for sale on the open market a certain amount of wood, the second is a verbatim paragraph taken from the Crown Forest Sustainability Act, the third is a paragraph stating that "the licence is subject to any rights that may come into existence after the date of this Licence as the result of land claim negotiations among the Province of Ontario, the Government of Canada, and the Algonquins", and the fourth and final is a condition to make waste wood in cutovers available to the public for fuelwood. The Audit Team considers conditions #1, #2 and #4 to be of questionable value, while condition #3 follows from condition #2.

The first condition is very complex, since it has a set of nine sub-conditions associated with it, but it is basically intended to allow for some higher quality wood to be made available on the open market. However, wood can be put on the open market by BMFC or, alternately, by one of the shareholders or licensee. The SFL does not stipulate what party or in what form the wood must be put on the market, and because many of the shareholder companies and contractors sell wood, and the Company does not have access to these records, it is not feasible to assess whether the condition is met or not. Discussion with MNR and the Company indicated that there was little interest in maintaining the condition. Accordingly, the Audit Team feels the condition should be reviewed more thoroughly and revised if there is any interest, or removed from the SFL.

Condition #2 states that "This Licence [i.e. the SFL] does not abrogate, derogate from or add to any Aboriginal or treaty right that is recognized or affirmed by Section 35 of the Constitution Act, 1982." This is a verbatim duplication of a paragraph from the CFSA, and since the CFSA is the basis upon which the SFL is issued, it does not seem necessary to highlight this as a special condition. Furthermore, highlighting this paragraph as being a special condition appears to confer greater significance to it, and it raises the question as to whether the paragraph is of greater importance than other parts of the CFSA.

Condition #3, quoted above, follows from Condition #2. If the SFL limited the scope of land claim negotiations, which is what would be required to trigger Condition #3, then Condition #2 would be violated. The Audit Team therefore questions the need for special conditions #2 and #3 in the SFL.

Finally, Condition #4 is related to the provision of making waste wood in cutovers available to the public for fuelwood. As a matter of course on Crown land, members of the public are able to apply for a licence to harvest small volumes of wood for personal use. Therefore, special condition #4 appears to be redundant and unnecessary.

### Recommendation # 20

That the MNR, with input from the Company and, as appropriate other stakeholders, review the special conditions in Appendix F of the SFL, and either revise them if there is interest in retaining them or remove them if they are redundant or impractical.

### 3.8.9 Licence Extension

The SFL for the Bancroft Minden Forest stipulates that there will be a periodic review of the Company's compliance with the terms and conditions of the licence for the period April 1, 2001 to March 31, 2005, according to the regulation governing Independent Forest Audits (Reg 160/04). Although this IFA also covers April 1, 2005 to March 31, 2006, it meets the terms of the above-quoted licence paragraph.

The IFA report is required to make a recommendation concerning licence extension, and the Audit Team finds that, during the audit period, the Company has been in substantial compliance with the licence, relevant laws and regulations, and the 2001 FMP and 1996 and 2004 FMPMs. As discussed in section 3.7.4, the Audit Team has concluded that the BMF is being managed within the bounds of sustainability and therefore is pleased to recommend that the Minister should extend the term of the SFL for an additional five-year period.

#### Recommendation # 21

The Minister of Natural Resources should extend the term of Sustainable Forest Licence #542585, held by the Bancroft Minden Forest Company Inc for the Bancroft Minden Forest, for an additional five year period.

### 4 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

This Independent Forest Audit examined the management of the Bancroft Minden Forest by both the Bancroft Minden Forest Company Inc and the Ministry of Natural Resources from April 1, 2001 to March 31, 2006. This period coincided with the term of the 2001 FMP, including a nine-month period from April to December of 2001 when a contingency plan was in place. The IFA covered compliance with the Crown Forest Sustainability Act and all other relevant regulations and policies, compliance with the SFL and other licences, compliance with the 2001 FMP and compliance with the FMPM's in place during the period.

In general, the audit found that the managed Crown land portion of the Forest was managed within the bounds of sustainability during the audit period, and we have recommended that the licence be extended for an additional five years. The Audit Team did not examine management of Parks, Unmanaged Crown lands, or private land in this Forest, and cannot make a determination of the sustainability of management on these lands. The Audit Team was impressed by the depth of knowledge and experience of the Company and MNR staff, the good rapport between the two organizations, and felt that the Company and MNR were navigating well many of the challenges and stakeholder consultation on the forest.

While the overall result is favourable, there were some areas where improvements should be made. The audit resulted in a total of 21 recommendations, including the recommendation to extend the licence for an additional five-year period. There were also 15 suggestions. The majority of these findings fell under the Consultation and Planning Principles of IFAPP; there are also important suggestions and recommendations under Principle 1 (Commitment), as well as under System Support and Monitoring (Principles 5 and 6). The Audit Team was also concerned that many of the ecological objective targets in the 2006 FMP were described for the landbase that included parks, unmanaged forest, and managed forest, with the contribution of the managed part of the landbase not being separately identified. This makes it difficult to see exactly what ecological values are proposed for the managed part of the forest, and also exposes the Company to some risk should the anticipated contribution of parks and unmanaged lands not materialize.

The suggestions under the Commitment principle reflect the Company's cautious demeanour and desire to maintain a low profile, and are not intended to reflect poorly on the zeal or commitment of Company or MNR staff. However, the Audit Team feels that the Company's cautious approach and lack of profile within Bancroft and the forest area as a whole leave the Company open to criticism and the risk of being misunderstood.

### Record Keeping

A number of recommendations and suggestions are also related to record-keeping, or the lack of complete records. The Company records were the subject of two recommendations, related to records of amendments, training, annual reporting and silvicultural monitoring. The Audit Team feels that, in part, the Company approach

reflects the reliance on the long history of many of the staff members in the Bancroft Minden area. While this may be sufficient in the short-term, the approach is out of step with the current business environment and people's expectations. Furthermore, as staff retire, that knowledge will be lost and it would be pre-emptive to have a more complete record of it.

The Audit Team also found that the LCC minutes files were referenced in a confusing manner and sometimes lacked important elements; an appropriate recommendation was made.

#### Site Level Focus

In a somewhat similar vein, the Audit Team found that Company staff are very highly focused on site level management and accord a lower emphasis on landscape level issues. This is very understandable. The forest is complex, there are many variations within stands, let alone between stands, and management in the selection and shelterwood stand types arguably extends to the individual tree level. Staff visit most sites at least several times before harvesting, and there are post-assessments and sometimes follow-up treatments and monitoring of renewal. The Company does an excellent job of managing at the site level.

In contrast, there is less emphasis placed on various landscape level matters, and this was very clear in both the 2001 and 2006 FMPs, where the Audit Team made recommendations related to wildlife habitat and old growth objectives, and the role of the pre-industrial forest in setting targets. The application of NDPEG was also a major concern for the Company; the Audit Team agreed that there are parts of NDPEG which do not fit well in the Great Lakes – St. Lawrence Forest. Since MNR is expected to release a new landscape level guide by the time development of the 2011 FMP commences, no recommendations were made regarding NDPEG. However, the Audit Team also recommended that a landscape level consideration of mid-tolerant species be included in the next FMP. Landscape level management principles provide broad direction to forest management; the Company is urged to more thoroughly consider these issues for the 2011 FMP.

### Clearcutting

The issue of clearcutting has been a long-running concern on the Forest, being an important topic of discussion during the preparation of the 2001 and 2006 FMPs. There is a range of views on the topic within the LCC, which the Audit Team expects is reflective of the range in views within the local communities.

From the Audit Team's perspective, the key concern is that there has been no consensus developed between the LCC, Company and District MNR concerning the appropriate extent and distribution of clearcutting in the BMF. This has led to a bump-up request concerning the 2006 FMP. One recommendation and four suggestions have been developed by the Audit Team to try to promote a greater degree of consensus.

More generally, two recommendations and three suggestions were made regarding the terms of reference, mode of operation and breadth of representation on the LCC. In some cases, the recommendations are intended to support processes already underway while at the same time drawing attention to the underlying issues. However, despite the number of recommendations and the lack of consensus on some key issues, the Audit Team felt that the LCC was generally operating well and members were committed and effective in bringing forward their perspectives.

#### Access

The Audit Team also examined issues related to access and access management, and made two recommendations intended to encourage the development of a comprehensive access strategy, especially with regard to All-Terrain Vehicles (ATVs). Road development on the Forest has tended to be *ad hoc*, with construction in relation to specific demands for access. MNR is leading the development of a comprehensive access plan for the forest, but since very little of the data required to develop such a plan have been historically collected (e.g. level, type and purpose of public use), there is considerable work required to complete the plan.

The Bancroft Minden Forest is largely accessed and so there was no primary or secondary road construction undertaken during the audit period or planned during the 2006 FMP period. Some operational (or tertiary) road construction is required from time to time, however the emphasis is on limiting new access. All new roads have a use plan which includes a strategy for decommissioning.

The issue of access is being driven by the impact of increasing access on ecological values, as well as impact on recreational areas and management of backcountry areas. The BMF is heavily used by residents and tourists alike for recreational purposes, and this includes the use of off-road vehicles. While roads can often be made physically impassible to vehicular traffic, it is difficult (and very expensive) to render a road impassible to ATV users unless a bridge is removed across a significant waterway. Signage is often used to regulate use, and while many road users and off-road enthusiast respect signage and other measures to decommission roads, there is a small percentage of people who do not. Thus, a large number of access-related conflicts arise from the growing popularity of ATVs.

Self-regulation would be the most desirable approach to managing access, and strict forcement is also an option in theory, although expensive in practice. These issues are process the province and direction from the Corporate level of MNR is needed to develope the basis for a more effective management approach.

### Table 17. Summary of Suggestions and Recommendations.

### **Principle: Commitment**

### Suggestions:

- The Company should consider developing a policy or vision statement identifying its core values and beliefs for management of the Bancroft Minden Forest.
- The Company should consider adopting a more pro-active stance towards publicizing itself and its management approach, and undertake measures to expand its local and regional profile.

### Principle: Public Participation

### Suggestions:

- The MNR District Manager should consider including alternates for all interests where possible to provide additional LCC membership.
- The LCC should consider revising its structure so that a single chairperson or two co-chairs are selected from within its membership.
- A protocol or set of specific criteria should be developed and agreed upon by the LCC and MNR to categorize administrative and minor amendments.
- MNR should place a high priority on providing the additional logistical and financial support to host and/or assist LCC members in attending regular regional/inter-regional LCC workshops and meetings.
- 7. The BMFC should attempt to provide additional harvest opportunities to First Nations.

### Recommendations:

- That the MNR and LCC complete the revision of the LCC Terms of Reference, following guidelines provided in the Forest Management Planning Manual by March 31, 2007. The MNR District Manager should, with assistance from the LCC, seek to broaden the range of interests represented on the LCC.
- That the LCC and MNR ensure that LCC meetings are held on a regular basis, and improve the content and organization of LCC meeting minutes.
- That the MNR and BMFC include appropriate First Nation media when they publish public notices related to planning and operations.

### Principle: Forest Management Planning

### Suggestions:

 The Planning Team for the 2011 FMP should consider identifying the contribution of the managed Crown land portion of the Forest to ecological targets (including old growth and wildlife habitat) set on the basis of the entire Crown landbase (i.e. including parks and protected areas).

- The Company, MNR, and LCC should consider implementing one or two experimental harvests laid out in a manner to test the practicality of multiple entries in clearcut forest types.
- The 2011 FMP planning team should examine alternate approaches to clearcutting in the scoping analysis in the initial stages of planning.
- The MNR, Company and LCC should jointly design an appropriate clearcut reporting template and the Company should follow this for the balance of the plan period.
- The MNR, Company and LCC should consider appointing a mediator to define common ground and differences regarding clearcutting, and to provide a basis for developing a shared perspective on this issue.
- MNR Region should coordinate operational approaches to values protection to provide more consistent and possibly more economical implementation of plan requirements.

#### Recommendations:

- That the MNR and Company continue to offer the LCC and First Nations opportunities for representation on the Planning Team for the 2011 FMP. It is also recommended that LCC members sign attendance ledgers to record their participation in public information centres.
- That the Company and MNR ensure that the 2011 FMP contains a description of the historic forest which meets the complete requirements of the FMPM.
- That the Planning Team for the 2011 FMP ensure that the plan contains full explanations for the objectives, targets, and strategies used in the plan.
- That the Planning Team for the 2011 plan set old growth targets in a manner consistent with MNR's corporate direction.
- That MNR review the need for wildlife management plans for major deer wintering areas in the Bancroft Minden Forest and if necessary update those plans to provide an integrated approach to meeting FMP targets.
- That Corporate MNR develop and implement direction to planning teams to require that
  where the ecological targets in an FMP (including old growth and wildlife habitat) are
  developed for the entire Crown land base (i.e. including parks and protected areas), the
  contribution of the managed Crown land base to those targets should be explicitly identified.
- That District MNR provide adequate resources and place a high priority on completing the Bancroft District Road Management Strategy.
- 11. That Corporate MNR, on a provincial scale, review its policy and legislation to ensure the wise use and management of Crown forest access roads and trails by the growing community of off-road vehicle users.
  In the interim, it is recommended that Bancroft District MNR continue to work with off-road vehicle user-groups under existing policy and legislation to control and manage the use of Crown forest access roads and trails.
- That the Company and District MNR, in non-selection and non-shelterwood forest units, designate as "selection thinning" the harvest of an overstorey that leaves the former understorey as a free-to-grow forest.
- 13. That the MNR and the Company work out the procedure for acknowledging values updates which are submitted through the ledger system to ensure the Company receives acknowledgment that the information has been received and approved.

- That Corporate MNR adequately fund values information collection, focusing on information to characterize water body thermal regime.
- That the MNR normally provide a decision regarding amendment requests within 15 days, as identified in the FMPM.

### Principle: Plan implementation

#### Suggestion:

14. The Company should investigate increased use of GPS for improved accuracy and possible cost reductions.

#### Recommendation:

16. That the planning team for the 2011 FMP include in the FMP clear objectives, strategies and measurable targets to promote the establishment and recruitment of mid-tolerant hardwood species on the Bancroft Minden Forest.

### **Principle: Systems Support**

#### Recommendation:

- 17. That the Company improve its record-keeping systems in the following areas:
  - · amendments:
  - training (attendance at and delivery of training programs, in particular the type of training programs delivered and the names and affiliations of persons delivering and receiving the training); and
  - · annual report submissions and re-submissions.

### **Principle: Monitoring**

#### Suggestion:

 The Company should provide explanatory text in its forthcoming Annual Reports of comparable quality to that in its earlier annual reports.

#### Recommendations:

- 18. That BMFC staff continue to work towards a more formal approach to silviculture monitoring and reporting.
- That the Company, with the assistance of MNR, improve outreach efforts and attempt to provide compliance training to all forest workers, licensees and contractors, starting in the 2007-08 fiscal year.

### Principle: Sustainability

No suggestions or recommendations.

### **Principle: Contractual Obligations**

#### Recommendations:

20. That the MNR, with input from the Company and, as appropriate other stakeholders, review the special conditions in Appendix F of the SFL, and either revise them if there is interest in retaining them or remove them if they are redundant or impractical.

### Conclusion:

21. The Audit Team believes that management of the Bancroft Minden Forest was in substantial compliance with the laws, licences and Forest Management Plans in effect during the audit period. The managed Crown land portion of the Bancroft Minden Forest was managed within the bounds of sustainability during the audit period and it is recommended that the term of Sustainable Forest Licence #542585, held by the Bancroft Minden Forest Company Inc, should be extended for a further five-year period.

## Appendix A: Comparison and Trend Analysis of Planned Versus Actual Forest Operations Reports for the Bancroft and Minden Forests

The Comparison and Trend Analysis Reports which follow as Appendix A were produced by Bancroft Minden Forest Company Inc. Two reports appear here, since the Bancroft Minden Forest was managed as two separate Crown Management Units until 2001. Although the Report was reviewed by the Audit Team, the Audit Team had no role in writing it.

## **2006 INDEPENDENT FOREST AUDIT**

# COMPARISON AND TREND ANALYSIS OF PLANNED VS. ACTUAL FOREST OPERATIONS

# BANCROFT MANAGEMENT UNIT & BANCROFT MINDEN FOREST

June 2, 2006

Prepared by:

Nick Baggs, R.P. N.G.B. Forest Man

#### 2006 Independent Forest Audit

### Comparison and Trend Analysis of Planned vs. Actual Forest Operations

### **Bancroft Management Unit & Bancroft Minden Forest**

June 2, 2006

#### Introduction

This report has been prepared in accordance with Appendix C of the *Ontario Ministry of Natural Resources Independent Forest Audit Process and Protocol (IFAPP) Copyright (c) Queens Printer, February, 2006.* The Comparison and Trend Analysis (CTA) is intended to summarize and compare planned with actual operations carried out during the five-year term of the current forest management plan (FMP) as well for the two preceding five-year terms and identify significant trends over time.

The report is intended to support the assessment of forest sustainability and the achievement of management objectives as specifically described in Criteria 7.4 of the IFAPP. Also, in accordance with Appendix C, this report has been prepared as a stand-alone document since the Report of Past Forest Operations (RPFO) is not yet available for the current term. It does, however, utilize text, information and identified trends from published RPFOs for the previous terms.

Tables 1 to 7 in this report were prepared specifically for the Independent Forest Audit and contain information from current and previous plans, RPFOs and annual reports while FMP-9, originally developed for the 2001-2021 FMP for the Bancroft Minden Forest, is provided in its original format. Planned and actual levels of achievement in Tables 3, 4 & 6 have been annualized to facilitate comparison between terms of unequal duration and the current term for which complete reporting of operations is not yet available. Areas contained in Tables 1 and 5 reflect only the managed Crown land portion of the management unit as defined in the 1996 Forest Management Planning Manual for Ontario's Crown Forests (FMPM). Tables A, B & C, contained within the body of the text, were prepared to facilitate the comparison and identification of trends.

Normally, each CTA five-year term would correspond to the five-year terms of the current FMP and two preceding Timber Management Plans (TMP) and/or Forest Management Plans (FMP). For the Bancroft Management Unit (MU), this approach was modified for the following reasons:

- The production of separate Timber Management Plans (TMP) for both the Bancroft and Whitney Management Units (MU) covering the period from 1990 to 1995,
- The production of Contingency Management Plans (CMP) for both the Bancroft and Whitney MUs covering a period of one year from 1995 to 1996,
- The amalgamation of the Bancroft and Whitney MUs in 1996, resulting in the production of the 1996-2001 FMP for the amalgamated land base of the Bancroft MU, and
- 4) Further amalgamation of the Bancroft and Minden Management Units in 2001 to create the larger Bancroft Minden Forest, managed by the Bancroft Minden Forest Company Inc.

CTA terms were thus defined on the basis of common strategic direction and land base rather than fixed five-year terms. For example, the 1995-1996 CMP for the Bancroft MU shares strategic direction and common elements with the 1990-1995 TMP for the Bancroft MU. Similarly, the 1995-1996 CMP for the Whitney MU shares direction and common elements with the 1990-1995 TMP for the Whitney MU. Using the land base of the amalgamated Bancroft MU (1996) as the basis for comparison between terms, it was therefore necessary to consider all four of these plans within the 1990 to 1996 term.

Accordingly, the 1996 to 2001 Bancroft FMP was used as the basis of reporting for the five-year term from 1996 to 2001 while the 2001-2006 FMP for the larger Bancroft Minden Forest was used to report on the five-year current term from 2001-2006. Although the area of the latter reflects further amalgamation, the land base for the current term provides the common linkage between CTAs for the Bancroft and Minden MUs and best reflects the current management of these two forests subsequent to 2001.

Table "A" following shows the duration of the selected terms and demonstrates their relationship to the corresponding management plans used in this CTA:

Table A – CTA Term Duration and Associated Management Plans for the Bancroft MU, Whitney MU and Bancroft Minden Forest

CTA Term	erm Duration Management Plans in years		Author	
1990-1996	6	1990-1995 TMP for the Bancroft Management Unit	MNR	
		1990-1995 TMP for the Whitney Management Unit	MNR	
		1995-1996 CMP for the Bancroft Management Unit	MNR	
		1995-1996 CMP for the Whitney Management Unit	MNR	
1996- 2001	5	1996-2001 FMP for the Bancroft Management Unit	MNR	
2001-2006	5	2001-2006 FMP for the Bancroft Minden Forest	BMFC	

The 1990-1995 TMPs for both the Bancroft and Whitney MUs as well as the 1996-2001 FMP for the Bancroft MU were prepared by MNR using the 1986 *Timber Management Planning Manual for Crown Lands in Ontario* (TMPM). Most recently, the 2001-2006 Forest Management Plan for the Bancroft Minden Forest prepared by Bancroft Minden Forest Company Inc. was developed in accordance with the FMPM (1996).

### **Summary of Total Area under Management**

Table 1 summarizes the Total Area under Management for the current term and two preceding terms. Land type areas are for Managed Crown land only. Tables from the 1990-1995 TMP for the Bancroft and Whitney MUs, the 1996-2001 FMP for the Bancroft MU and the 2001-2006 FMP for the Bancroft Minden Forest were used to define the land base under management at the beginning of each CTA term. Since twelve specified working groups were used to summarize the area of production forest under management, it was necessary to combine some of the working group areas shown in Tables TMPM 4.8.2, TMPM 4.9, FMP-1 & FMP-2 from the various management plans.

In considering Table 1, one must be mindful that the area under management for the current term is for the amalgamated Bancroft Minden Forest while the area under management for past terms was derived from the smaller land base of the former Bancroft and Whitney MUs (1990-1996) and the Bancroft MU (1996-2001). Thus, to provide a more effective comparison with the current term, Table 1 BMF was also developed to show the effect of further combining the Bancroft and Whitney MUs with both the Minden and L.M. Frost Centre MUs for the 1990-1996 term, and combining the Bancroft MU with the Minden MU for the 1996-2001 term.

Examination of Table 1 reveals that barren & scattered (B&S) and not-satisfactorily-regenerated (NSR) lands account for a decreasing percentage of the production forest (e.g., 8,739 ha or 4.8% in 1990; 3,513 ha or 1.8% in 1996; and 2,065 ha or 0.8% in 2001). Although decreasing percentages of B&S / NSR lands potentially reflect well on the management of the forest, they are probably due less to the active assessment of regeneration and reclassification of surveyed areas and more to the loss of spatial relation of harvest depletion records to the current forest resource inventory (FRI) resulting from the recompilation

of the Bancroft and Whitney inventories for the production of the 1996 Bancroft FMP and the development of an entirely new FRI for the production of the 2001 Bancroft Minden FMP.

Table 1 also shows a 2,730 ha (1.4%) increase in Crown Managed productive forest area from 200,878 ha in 1990 to 203,608 ha in 1996. While the total area of protection forest declined greatly by 15,303 ha (84%) over the same period from 18,231 ha to only 2,928 ha, this was offset by a greater increase of 18,033 ha (9.9%) in production forest area from 182,647 ha to 200,680 ha. This increase appears to have been distributed between all working groups except for Pr, S & Mh which actually declined from 1990 to 1996. In spite of increased production forest area, total Crown Managed forested land actually decreased 4,387 ha (1.9%) from 227,128 ha in 1990 to 222,741 ha in 1996 because of offsetting declines in non-productive forested area from 26,250 ha in 1990 to only 19,134 ha in 1996.

These changes resulted from the concurrent production of a new FRI and rationalization of the production forest land base for the 1996 FMP. The latter of these two processes involved designation of stands that were isolated by rock or wetland topography or within built up municipalities as production forest reserve (PFR) to be removed from the Maximum Allowable Depletion land base.

Moving into the current term, Table 1 BMF shows that with the further amalgamation of the Bancroft and Minden MUs, there was a 42,449 ha (14%) decrease in Crown Managed productive forest from 312,131 ha in 1996 to only 269,682 ha in 2001. The majority of this decrease (35,465 ha) occurred within the protection forest category while the remainder (6,984 ha) was production forest. In addition, there was a 19,599 ha (41%) decrease in non-productive forest from 48,290 ha to 28,691 ha during the same period. All told, this resulted in a 62,047 ha (17%) decrease in the total amount of Crown Managed forested land from 360,420 ha in 1996 to just 298,373 ha in 2001.

Although this decline appears alarming at first glance, comparison of Tables 4.8 from the 1996 Bancroft and Minden FMPs with Table FMP-1 from the 2001 Bancroft Minden FMP reveals offsetting increases in Crown Unmanaged forest area, thus alleviating concerns regarding the material loss of productive forest area. In fact, it appears that there was a 2,215 ha gain in total Crown productive forest area excluding Parks (312,131 ha vs. 314,346 ha) and a 2,917 ha gain in total Crown forested land (360,420 ha vs. 363,337 ha) when comparing these values at the beginning of the 1996-2001 term (Table 1) with those for combined Crown Managed and Unmanaged lands in Table FMP-1. However, this difference probably resulted from verification of ownership classes in preparation of the planning inventory for the 2001 FMP.

In contrast, the movement of Crown Managed forest into Crown Unmanaged forest resulted from the conclusion of Ontario's Living Legacy (OLL) process and expansion of the provincial parks system and other protected areas. Although most of these areas were yet to be regulated, they were nevertheless incorporated into the 2001 FMP and withdrawn from the Crown Managed forest in preparation for the 2001 FMP for the Bancroft Minden Forest. New or expanded Provincial Parks included the Dalton/Digby (now Queen Elizabeth II) Wildlands, Kawartha Highlands, Egan Chutes and Silent Lake Provincial Park Additions.

It is presumed that these protected areas would have contributed towards meeting several objectives in the 2001 FMP (e.g., wetlands, old growth, genetic, landscape and stand level forest diversity; tourism/recreation, and natural values dependent on forest cover) without adversely affecting those for timber production. Similarly, OLL Enhanced Management Areas (EMA) identified within the Bancroft Minden Forest would also have contributed to the achievement of forest diversity objectives as well as those for timber production since logging (with special conditions) is allowed within these areas.

Table 2 describes the forest units (FU) used in the various management plans for the three terms and lists the silvicultural systems employed in their management. It also shows the relationship between forest units and defined working groups from Table 1. Reference to related site types and detailed FRI parameters and classification criteria are also provided where such information was used to differentiate FUs. Additional comments are also provided to place FUs within the proper management context.

Since forest units were significantly modified with the production of each new TMP/FMP, it was necessary to list them separately for each term. For 1990-1996, it was also necessary to list them separately for the Bancroft and Whitney TMPs since differing management regimes for similar FUs prevented common groupings. For example, Red Pine was managed under the shelterwood system on the Whitney MU but under the clearcut system on the Bancroft MU. In addition other FUs containing hard maple and tolerant hardwoods were too dissimilar to allow grouping.

Table 5 is intended to summarize the managed productive forest area by forest unit for each of the CTA terms. FMP-9 from the 2001-2006 FMP for the Bancroft Minden Forest has been modified to include age class totals for all forest units combined and is provided in place of Table 5 for the current term only. For the two previous terms, Tables 4.8.2 & 4.9 from the 1990-1995 TMP and 1996-2001 FMP provide little of the information required to complete Table 5. In addition, these tables summarize area by working group instead of forest unit. To accommodate these differences, Table 5 has been modified to summarize this information separately for both the 1990-1996 and 1996 to 2001 terms.

Table 5 for the Bancroft MU shows just over 21% of the Crown Managed production forest in the younger age classes (0-20, 21-40 & 41-60 yrs) at the beginning of the 1990-1996 term with almost 52% in the older age classes (61-80, 81-100, 101-120 & 121+ yr) and the remaining 27% classified as all-aged for management under the selection system. Although the area in younger age classes increases to more than 38% at the beginning of the 1996-2001 term, the area in older age classes increases to almost 62%. Both of these increases resulted from the complete reassignment of all-aged forest primarily to the 41-60, 61-80 and 81-100 yr age classes. Although this represents a dramatic re-compilation of the FRI data, there was no material change in management strategy since the management of tolerant hardwoods remained under the selection system even though the stand data was compiled by age class. To facilitate comparison between terms, this information has been summarized in Table B following.

Table B – Percentage of Total Crown Managed Production Forest by Age Class Over Time for the Bancroft MU, Whitney MU and Bancroft Minden Forest

	Percentage of	Total Crown Managed	Production Forest (%)	By Age Class	
Age Class	1990 Bancroft & Whitney Table 5	1996 Bancroft Table 5	2001 Bancroft Minden FMP-9 Available +Unavailable	2001 Bancroft Minden FMP-9 Available Only	
*0 to 20	5.6	3.8	3.8	4.0	
21 to 40	2.9	1.9	1.6	1.8	
41 to 60	12.9	32.7	5.6	4.6	
61 to 80	33.2	41.6	28.3	25.4	
81 to 100	12.9	15.3	18.7	17.8	
101 to 120	3.4	3.1	4.2	4.0	
121 +	2.3	1.6	1.2	1.1	
All-aged	26.8	0.0	36.6	41.3	
Total	100.0	100.0	100.0	100.0	
Area on which % is based (ha)	182,647	200,680	260,161	214,715	

<sup>\*</sup> includes B&S/NSR (all terms) and PFR (1990-1996 only)

Although it is not possible to draw direct comparisons between the current term for the amalgamated Bancroft Minden Forest and past terms for the Minden MU, information from FMP-9 for 2001-2006 has

nevertheless been incorporated into Table B. The amalgamated forest does exhibits a distinct lack of younger age classes (11%), however, the older age classes are also less dominant (52%). The trend towards the reclassification of all-aged forest has also been reversed at the beginning of the current term, with more than 37% of the production forest area re-assigned to this category. Because of the dramatic differences in the method of data compilation between terms, it is very difficult to identify any real trends except to say that both the former and amalgamated land bases suffer from a relative deficiency in the younger age classes.

Table B also shows that more than 45,000 ha of Crown Managed production forest area were deemed unavailable in the production of the 2001 FMP. This occurred through a process of "netting down" the land base of the Minden sub-unit to better reflect historical harvesting practices and the expertise of those possessing a thorough understanding of local site conditions. Efforts were made to concentrate forestry operations on better site types and thereby assign shallow, sensitive, low-productivity/quality sites with rough topography and poor access to the unavailable portion of the Crown managed production forest. In most cases, such areas were identified as Production Forest Reserve (PFR) in the new FRI.

Examination of Table FMP-9 shows that most of the netting down took place within the INT1 (12,003 ha), OR1 (9,605 ha), MW1 (4,052 ha), PW1 (3,101 ha), OC1 (3,072 ha) and HD2 (3,011 ha) FUs supporting the characterization in the FMP text that such areas were site class 3 tolerant hardwoods, mixedwoods and poplar/birch stands.

Also apparent in Table B, is that the effort to concentrate forestry operations on better sites resulted in increasing the relative percentage of area available for all-aged management from just under 37% to more than 41% while reducing relative percentages of available area particularly in the 61-80 and 81-100 yr age classes. This is consistent with strategies for landscape and stand level forest diversity contained in the 2001-2006 FMP. Also, increasing the amount of area under selection management is consistent with the timber production objective "to provide a continuous, economical and stable annual supply of suitable wood to the forest industry and to upgrade the quality of the forest products derived over time."

Finally, it is important to note that the Bancroft Minden Forest has been approved for the preparation of a new Forest Inventory in advance of planning for the 2011-2021 FMP. New inventory characteristics and planning layer updates will no doubt affect land base definitions and future trends in the amount of production forest under Crown management, by forest unit and by age class.

#### **Summary of Planned and Actual Harvest Volumes**

Table 3 summarizes planned and actual harvest volumes for the current term and two preceding terms. Planned/actual levels of achievement have been annualized to facilitate comparison between terms of unequal duration and the current term for which complete reporting of operations is not yet available. Volumes are shown by species, with upland hardwood (UH) and lowland hardwood (LH) groupings to facilitate comparison of past terms with the current term.

Planned harvest volumes were derived using TMPM Tables 4.17 from the 1990-1995 TMP and the 1996-2001 FMP for the 1990-1996 and 1996-2001 terms respectively while Table FMP-21 from the 2001-2006 FMP was used to derive planned harvest volumes for current term. Tables RPFO-4 (1990-1995 and 1995-1996) were used to report actual harvest volumes for the 1990-1996 term while Tables RPFO-4 & 4a (1996-2001) were used to report volumes for the 1996-2001 term. Finally, Tables AR-3 (2001-2002, 2002-2003 and 2003-2004) and AR-4 (2004-2005) were used to report current term harvest volumes.

Table 3 shows that planned average annual harvest volumes appear to be gradually declining over time. For example, average planned annual harvest volumes were 217,749.2 m3 for 1990-1996, decreasing to 200,135.8 m3 for 1996-2001 but only increasing to 227,422.3 m3 for the amalgamated Bancroft Minden Forest for 2001-2006. This trend may be attributed to several circumstances listed as follows:

- a) "Netting down" processes to rationalize the MAD land base for the 1996 FMP and make some portion of Crown Managed production forest unavailable for AHA calculation for the 2001 FMP;
- b) Increased length of cutting cycle for stands managed under the selection system from 20 years in previous terms to 30 years in the current term:
- Gradual increases in minimum basal area retention for areas harvested under both the shelterwood and selection systems;
- d) An increased proportion of area managed under the selection system:
- e) The establishment of additional parks and conservation reserves through the OLL process; and
- f) Gradual increases in the percentage of allocated area withdrawn for reserves through the Area of Concern planning process and the implementation of various Provincial guidelines.

All of these circumstances have had the effect of reducing planned volumes from one forest management plan to the next, in spite of a longer term trend towards higher forecast yields (see Table C following). Reductions in planned harvest volume from 1990 to 1996 appear to have been greatest in poplar, white pine, spruce, white birch and to a lesser extent for Mh, UH & LH combined. In contrast, reductions in planned harvest volume from 1996 to 2001 appear to have been greatest for Mh, UH & LH combined; white birch, balsam fir and cedar while planned harvest volumes for white pine, red pine and poplar appear to have actually increased.

In contrast, actual annual harvest volumes have increased from 129,306 m3 for 1990-96 to 146,874.0 m3 for 1996-2001 and again to 150,898.6 m3 for 2001-2006 for the amalgamated land base of the Bancroft Minden Forest. Although there is not necessarily any correlation between trends in planned and actual volumes, Table 3 reveals that annual harvest volumes increased from 59% of planned for 1990-1996 to 73% of planned for 1996-2001 before falling back to 66% of planned to date for the current term. To facilitate comparison between terms, this information has been summarized in Table C within the text of this report.

Reasons for lower-than-planned harvest volumes are summarized in the two most recent RPFOs and are discussed in the following paragraphs. Under-achievement of forecast harvest volumes from 1990-1996 was attributed to several implementation issues including: a) wet summer operating conditions in 1992-93, b) inaccurate forest inventories, and c) the inability of MNR staff to effect tendered sales in a timely manner. These circumstances were exacerbated by poor market conditions from 1990 to 1993 and a preponderance of low quality unlicensed Crown wood offered for tendered sale.

Although some of these issues persisted into the 1996 to 2001 term, market demand improved considerably as did the utilization of low quality products. High rates of recovery for pulp and expanding markets for hardwood chips, pallet grade hardwood and strong markets for fuelwood frequently resulted in rates of utilization exceeding CFSA standards. It is also probable that efforts to rationalize the land base and focus operations on the more productive sites helped to increase volume recovery during this term. In spite of improved economic conditions, a number of natural events occurred to restrain annual rates of harvest. These included excessive spring and fall rainfall, periodic fire bans during the summer and warmer than normal winter operating conditions. In addition, MNR downsizing resulted in a shortage of staff capacity to implement the tendered sale process prior to 1998 while SFL establishment after that resulted in the imposition of new SFL operating fees that increased the overall cost of operations.

The first year of the 2001-2006 term experienced low levels of depletion and utilization despite generally favourable markets. A hot dry summer followed by mild winter conditions served to suppress the rate of harvest. In addition, a lack of SFL staffing capacity during FMP production and uncertainty over final FMP approval caused some licensees to arrange for alternative wood supplies from private land and the open market. Since then, harvesting rates have rebounded and final performance for the current term is likely to mirror that for 1996 to 2001.

Average annual yields as calculated from Tables 3 & 4 have increased gradually over time from 43.4 m3/ha for 1990-1996, to 54.6 m3/ha for 1996-2001 and 59.7 m3/ha to date for 2001-2006. The reasons for this include improved markets and utilization as described above, particularly from 1996 to 2001. In addition, improved reporting of bypass areas has resulted in the same reported volumes being harvested

from a smaller net area. Forecast yields were also derived from Tables 3 & 4 and verified against TMPM Tables 4.1.5 & 4.17 (1990-1996 & 1996-2001) and Tables FMP-18 & FMP-20 (2001-2006). To facilitate presentation and further comparison between terms, this information has also been summarized in Table C following.

Table C shows that forecast yields have also increased over time, from 34.7 m3/ha in 1990 to 43.2 m3/ha in 1996 to 62 m3/ha in 2001. This has occurred largely in response to improved actual yields (see above). During the same period, the accuracy of yield forecasts has improved substantially from underestimates of 8.7 m3/ha (25%) between forecast and actual yields for 1990-1996 to current overestimates of only 2.3 m3/ha (4%) to date for 2001-2006, reflecting the improved precision of yield forecasts employed in the development of the 2001 FMP.

Table C – Actual Harvest Volume and Yield Relative to Forecast Harvest Volume, Yield and Actual Harvest Area Over Time for the Bancroft MU, Whitney MU and Bancroft Minden Forest

Term	Actual harvest area as a % of planned harvest area (%)	Actual harvest volume as a % of planned harvest volume (%)	Forecast Yield (m3/ha)	Actual Yield (m3/ha)
1990-1996	47	59	34.7	43.4
1996-2001	58	73	43.2	54.6
2001-2006	69	66	62.0	59.7

Table C also shows that total volume recovery as a percentage of planned harvest area has increased over time. For example, 59% of the forecast harvest volume was achieved from only 47% of the harvest area from 1990 to1996 as a result of underestimated yields. Again, 73% of the forecast harvest volume was achieved from 58% of the harvest area from 1996 to 2001, reflecting similar circumstances. In contrast, 66% of the volume achieved to date was from 69% of the area for 2001-2006, reflecting the improved precision of yield forecasts used in the production of the 2001 FMP

Beyond the current term, many of the same factors will continue to affect actual harvest volumes on the Bancroft Minden Forest. It is also reasonable to expect further reductions of planned harvest volumes in the future. Increasingly demanding annual planning and monitoring requirements associated with 2004 FMPM will increase the cost of operations, making it more difficult to implement timber production strategies on more marginal sites – effectively constraining the economically operable land base. In addition, implementation of the Natural Disturbance Pattern Emulation Guidelines for the 2006 FMP will also result in increased planning costs and further reductions in allowable harvest levels.

### Summary of Planned and Actual Harvest Area

Table 4 summarizes planned and actual harvest areas for the current term and two preceding terms. Planned/actual levels of achievement have been annualized to facilitate comparison between terms of unequal duration and the current term for which complete reporting of operations is not yet available. Harvest areas are shown for each term by forest unit, corresponding to those described in Table 2.

Planned harvest areas were derived using TMPM Tables 4.15 from both the 1990-1995 TMP and the 1996-2001 FMP for the 1990-1996 and 1996-2001 terms respectively while Table FMP-18 from the 2001-2006 FMP was used to derive planned harvest areas for current term. Tables RPFO-1 (1990-1995 and 1995-1996) were used to report actual harvest areas for the 1990-1996 term while Table RPFO-1 (1996-2001) was used to report areas for the 1996-2001 term. Finally, Tables AR-1 (2001-2002, 2002-2003, 2003-2004 and 2004-2005) were used to report harvest areas for the current term.

Planned harvest areas decreased substantially from term to term, with a planned annual harvest of 6,284 ha for 1990-1996, 4,638 ha for 1996-2001 and only 3,669 ha for 2001-2006 on the larger Bancroft Minden

Forest. Over the same period, planned harvest volumes were also declining due to a number of factors including: a) net downs to the managed portion of the productive forest land base, b) Increased cutting cycle lengths for stands managed under the selection system, c) increasing minimum basal area retention for areas harvested under both the shelterwood and selection systems; d) increasing proportion of area managed under the selection system; e) expansion of parks and conservation reserves through the OLL process; and f) increasing percentages of allocated area withdrawn for reserves through the Area of Concern planning process and the implementation of various Provincial guidelines. These trends are discussed in more detail in the Summary of Planned and Actual Harvest Volumes and the RPFOs for previous terms. In addition, increasing average yield forecasts from term to term (Table C) exacerbated the rate of planned harvest area decrease relative to decreases in planned harvest volumes (Table 3).

Actual annual harvest area decreased from 2,978 ha for 1990-1996 to 2,692 ha for 1996-2001 to 2,526 ha to date for 2001-2006. In relative terms, these levels represent 47% of the planned harvest area for 1990-1996, 58% for 1996-2001 and 69% for 2001-2006 (Table C). Since harvest volume is a function of harvest area and yield, the reasons for harvest area underachievement are generally the same as those for underachievement in harvest volume. These are discussed thoroughly in the preceding *Summary of Planned and Actual Harvest Volumes*.

### Summary of Renewal and Maintenance

Table 6 summarizes planned and actual renewal, tending and protection operations for the current term and two preceding terms. Planned/actual levels of achievement have been annualized to facilitate comparison between terms of unequal duration and the current term for which complete reporting of operations is not yet available. Areas are shown for each activity and are summarized for un-even aged & even-aged management, natural & artificial regeneration, site preparation, tending and protection.

Planned renewal areas were derived using TMPM Tables 4.19 from both the 1990-1995 TMP and the 1996-2001 FMP for the 1990-1996 and 1996-2001 terms respectively while Table FMP-25 from the 2001-2006 FMP was used to derive planned renewal areas for current term. Tables RPFO-7 (1990-1995 and 1995-1996) were used to report actual renewal areas for the 1990-1996 term while RPFO-7 (1996-2001) was used to report areas for the 1996-2001 term. Finally, Tables AR-6 (2001-2002, 2002-2003 and 2003-2004) and AR-7 (2004-2005) were used to report renewal areas for the current term.

Although some care must be taken in the direct comparison of silvicultural activity levels for the first two terms with those for the current term for the larger Bancroft Minden Forest, comparison of activity levels as a percentage of planned operations and in relation to actual harvest area remain valid indicators of silvicultural performance and commitment.

Table 6 shows that total planned regeneration has steadily decreased over time, from 6,647.3 ha annually for 1990-1996, to 5,046.1 ha for 1996-2001, and to 3,066.8 ha for 2001-2006. Over the same period, actual regeneration levels also decreased from 3,151 ha annually for 1990-1996, to 2,709.2 ha for 1996-2001, to 2,206.3 ha annually to date for 2001-2006. Regeneration levels by activity were lower than planned in all cases except for CLAAG treatments in the 2001-2006 term. Overall, total regeneration was 47% of planned for 1990-1996, 54% for 1996-2001 and 72% to date for 2001-2006. That reported regeneration levels have steadily increased in relation to planned levels speaks well to both the current level of management commitment and the improved precision of planning on the Bancroft Minden Forest.

Natural regeneration was the most significant component of the planned renewal program in all terms representing 90% of total regeneration for 1990-1996, 89% from 1996-2001 and 91% for 2001-2006. Since the achievement of natural regeneration targets depends largely on the harvest of suitable forest units, one would expect total regeneration to appear most favourably in relation to actual harvest levels, which have also decreased over time (see *Summary of Planned and Actual Harvest Volumes*). In fact, this was the case for all three terms with total regeneration equivalent to 106% of the actual harvest for 1990-1996, 100% for 1996-2001 and 92% to date for 2001-2006 (Tables 4 & 6). Although there is not necessarily a direct correlation between the area harvested and that renewed in any given term,

successive terms of high treatment percentages suggest that the majority of harvested areas are being accounted for in terms of natural or artificial regeneration.

Although a simple comparison between terms might suggest that regeneration as a percentage of total harvest area may be declining over time (e.g., from 106% to 100% to 92%), this is probably of little consequence given current treatment levels. Apparent over-treatments in the first and second term could be the result of the time lag between the reporting of harvest and the reporting of subsequent renewal operations. With steadily declining harvest rates, the reporting of regeneration activities in comparison to lower current harvest levels could have the effect of boosting apparent performance. With respect to the current term, the apparent rate of under-treatment could have simply resulted from an acceleration of that trend and/or the delayed reporting of uneven-aged management or even-aged natural regeneration early in the term leaving greater than average outstanding balances of natural regeneration which have not been incorporated into Table 6 but remain to be reported in the final year of the current term (2005-06).

Further examination of Table 6 shows that levels of artificial regeneration are also declining over time. Although tree planting as a percentage of planned levels has remained fairly stable over time (e.g., 41% of planned for 1990-1996, 31% for 1996-2001 and 42% for 2001-2006), tree planting has been steadily declining in absolute terms from 248 ha annually for 1990-1996 to 175 ha for 1996-2001 to only 99 ha annually to date for 2001-2006. Several reasons for this trend are cited in past RPFOs. Most notably, reduced levels of planting resulted from lower than planned harvest levels and constrained government funding for artificial regeneration projects through the 1990's. Considerable area in the red oak forest units were also to be planted following shelterwood cutting, however, these depletions did not occur to the extent that was forecast. Also, through FOP development, it was determined that many oak stands could support more increment in growth and value, thus commercial improvement thinnings were performed instead of shelterwood seeding cuts. This also resulted in less area requiring planting.

In the current term, however, there has been reduced reliance on artificial regeneration with a shift in investment focus away from conversion and plantation establishment, realizing that good markets have been established and will continue to exist for poplar. Rather, emphasis has shifted towards natural regeneration with supplemental stocking to ensure regeneration success in shelterwoods. An additional benefit of this strategy may be the possibility of earlier removal cuts.

The same trends are also evident for site preparation, with achievement levels of 26% of planned for 1990-1996, only 14% for 1996-2001 and 20% for 2001-2006. In absolute terms, site preparation decreased from 180.7 ha annually for 1990-1996 to 79.8 ha for 1996-2001 and only 53.5 ha after 2001 on the larger Bancroft Minden Forest. As with tree planting, lower-than-planned levels of site preparation were the direct result of lower depletion levels and constrained funding. Additionally, some sites originally planned for site preparation turned out to be inappropriate for that treatment because of the site conditions encountered. Overall, though, sufficient area was treated to accommodate the planting of trees that had been requisitioned and were growing in nurseries. Considerable white pine shelterwood ground scarified in the latter part of the second term was planted in the current term.

The increasing inability to perform prescribed burning due to costs and crew availability adversely impacted both the levels of forecast site preparation and tree planting, especially from 1996 to 2001. As a result, many sites were left to regenerate to poplar and other intolerant/mid-tolerant species while a backlog of pine shelterwood seeding cuts requiring site preparation through prescribed fire accumulated. In contrast, targets for prescribed burning have already been exceeded in the current term (2001-2006) with an unplanned prescribed burn after the FOP indicated this would be the only feasible renewal option.

Achievement levels for tending were 114% of planned for 1990-1996 decreasing to only 32% for 1996-2001 before increasing again to 103% to date for 2001-2006. The apparent dip in relative performance for 1996-2001 was due to unrealistically high planned levels for uneven-aged improvement cutting (see below). In absolute terms, average annual tending levels decreased from 1,993.7 ha for 1990-1996 to 1,480.4 ha for 1996-2001 and remained stable at 1,494.5 ha after 2001 on the Bancroft Minden Forest.

The majority of the tending effort in all terms focused on improvement cutting (even and uneven-aged), which decreased from 1,913 ha annually for 1990-1996 to 1,173.8 ha for 1996-2001 to 1,147.3 ha to-date for 2001-2006. Although it first appears that stand improvement effort may be on a declining trend, this activity is holding steady in relation to total harvest area. Although 1,913 ha of stand improvement work represents 64% of the annual harvest area for 1990-1996, 1,173.8 ha represents 44% of the harvest area for 1996-2001 while 1,147.3 ha represents 45% of the harvest area for 2001-2006 (Tables 4 & 6). The higher rate of achievement reported for 1990-1996 may be suspect as the RPFO states that all stands harvested under the selection system received both harvest and improvement cuts at the same time with all marked trees felled, but not necessarily utilized. Although this was the intent, it is unlikely that this objective was fully realized without project funding, monitoring and markets for hardwood pulp. Conversely for 1996-2001, lower relative achievement levels (1,074.8 ha actual vs. 3,304 ha planned) reflect the unrealistic expectation that all 3,304.4 ha planned for uneven-aged management would also receive improvement cutting.

Increasing relative levels of expenditure are most evident with respect to cleaning. Although planned levels of manual cleaning increased from 342 ha annually for 1990-1996 to 455.8 ha for 1996-2001 before decreasing to 190 ha to date for 2001-2006, relative achievement levels have steadily increased from 10% of planned for 1990-1996 to 48% of planned for 1996-2001 to 100% of planned to date for 2001-2006. In absolute terms, actual achievement levels have increased from 32.6 ha annually in 1990 to the current annual level of 189.8 ha to date for 2001-2006. The 1990-1995 RPFO cites funding constraints and poor markets for hardwood pulp as contributing factors to low achievement levels for 1990-1996. In contrast, achievement levels for the 1996-2001 and 2001-2006 terms were attributed to improved stability of funding and increased efforts by management to follow-up on the progress of planted areas.

Even more dramatically, chemical ground cleaning has exceeded planned levels in all terms increasing from 41.2 ha annually for 1990-1996 to 89.6 ha for 1996-2001 to the current annual level of 157.5 ha to date for 2001-2006. Although much of this work occurred in association with Forestry Futures Trust Fund projects for white/red pine restoration and renewal, FMP targets to increase the abundance of white/red pine forest types towards pre-settlement era abundance have nevertheless been tempered by the limited availability of reasonably productive sites which are treatable at a reasonable cost.

In summary, lower than planned natural regeneration levels from 1990 to 1996 were largely a function of lower than planned harvest levels. Although some artificial regeneration activities may have been constrained by the unavailability of suitable sites resulting from lower than planned harvest levels, the RPFO concluded that sufficient area was treated to accommodate the planting of trees that had been requisitioned and were growing in nurseries. The RPFO also cites inconsistent government funding as a reason for reductions in the overall silvicultural program, particularly in terms of stand improvement work.

Similarly, from 1996 to 2001, regeneration levels remained closely correlated to actual harvest levels but increased in relation to planned levels due to the superior precision of planning and improved transitional funding of operations through formation of the Special Purposes Account (which became the Forestry Futures Trust Fund in 2001). In addition, funding through the Forestry Futures Trust Fund facilitated the accomplishment of silvicultural targets, most notably tolerant hardwood stand improvement and white/red pine restoration/renewal work.

Finally, stable levels of artificial regeneration and increased levels of cleaning and stand improvement after 2001 reflect both commitment to the sustainable management of the Bancroft Minden Forest and dedicated funding through the Forest Renewal Trust Fund. Continued utilization of the Forestry Futures Trust Fund has further served to accelerate the accomplishment of silvicultural targets. In this way, effective and sufficiently funded renewal strategies have contributed to the achievement of forest diversity and timber production objectives contained within the 2001-2006 FMP for the Bancroft Minden Forest.

### **Summary of Regeneration Assessment**

Table 7 provides a summary of harvested area successfully regenerated for all forest units combined as a portion of total area harvested between 1990 and 1996. This time lag (9-15 yrs) between the original year of harvest (occurring from 1990 to 1996) and the latest potential date of regeneration assessment (2005) ensures that sufficient time has elapsed that all harvested areas could have potentially been assessed for their regeneration success. This period corresponds to the 1990-1996 CTA term referenced throughout this report, facilitating comparison of regeneration success with other identified trends.

The total area harvested from 1990 to 1996 was obtained from Tables RPFO-1 for 1990-1995 and 1995-1996. The extent of this area surveyed for regeneration success was determined by reviewing actual regeneration surveys performed by Bancroft Minden Forest Company Inc. from 1998 to present.

Table 7 shows that only 640 ha (12%) of the area harvested from 1990 to 1996 under even-aged management systems (clearcut and shelterwood) and none of the area harvested under uneven-aged management (selection) has been assessed for regeneration success. On the surface, this level of achievement appears inadequate. However, it is not surprising given the fiscal realities and standard practices during the period that the assessments were conducted. For example, TMP forecasts of regeneration assessment would normally include targets for areas harvested under the selection system, yet it was standard practice to assume that all areas harvested under this system were successfully regenerated and did not require a regeneration survey. The same assumption was used for forest units managed under even-aged systems (shelterwood and clearcut areas planned for natural regeneration).

Normally, the only areas to receive a regeneration assessment were conifer plantations, reflecting limited budgets and resources available to MNR. Comparison of the total area surveyed (640 ha) with the total area planted during the same term (1,488 ha from Table 6) would suggest that approximately half of the conifer plantations were being regularly assessed. Moreover, regeneration assessment targets have historically been based on planned harvest area rather than actual harvest area which historically has not exceeded 60% (Table C). Thus, comparison of actual survey levels with TMP/FMP forecast levels would exaggerate the true extent of any underachievement. This would also be the case for the current term since FMP-28 in the 2001-2006 FMP for the amalgamated Bancroft Minden Forest forecasts 17,056.1 ha of regeneration and post-harvest assessments in comparison to 18,346.8 ha of planned harvest area.

Table 7 also indicates that of the actual area surveyed, 409 ha (64%) were declared successfully regenerated. Much of this survey effort was directed at white pine and red pine restoration work where significant expenditures had been made towards artificial regeneration. The above result demonstrates reasonable success of restoration to red and white pine during a period of uncertain silvicultural funding. The rest of the surveyed area not found to be successfully regenerated to the intended future forest type (i.e. white pine) has typically regenerated to another forest unit (poplar with a pine component) suggesting some degree of silvicultural failure in spite of representing a regeneration success.

It was recognized in the *Bancroft Crown Management Unit Independent Forest Audit 1996-2001* that "Until 1998, MNR was still responsible for survival assessments and FTG surveys but was unable to carry them out due to a lack of resources. In 1998, the Company entered into a Forest Management Services Agreement with MNR and began conducting the FTG surveys." At that time, it was noted that the Company had almost caught up with the backlog. Because of this, it is anticipated that Table 7 will reflect higher achievement levels for the 1996-2001 term in the next independent forest audit as many of the areas harvested during this term will have already been surveyed.

Recently, BMFC has developed survey and inventory update procedures that will ensure effective monitoring of regeneration success. These include rationale and procedures for performing pre-harvest, post-harvest, regeneration and free-to-grow surveys to measure the achievement of regeneration and management standards in accordance with the Silvicultural Effectiveness Monitoring Manual for Ontario (SEMMO). A review of past harvesting records and full reconciliation of Class X, Y & Z lands has also been undertaken to ensure that all candidate areas are identified for survey or FRI reclassification.

### 2006 Independent Forest Audit

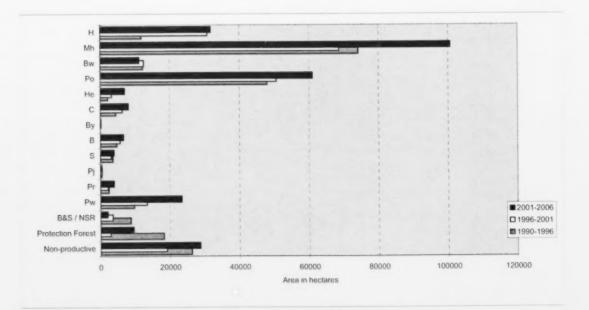
Table 1 - Summary of Total Area Under Management

### Past and Current Plans - Crown Managed

MU: Bancroft & Whitney (1990-1996), Bancroft (1996-2001) and Bancroft Minden (2001-2006)

				Area in hectares		
Land Type			Past Pla	ans	Current	
Land Type		Plan Term	1990-1996	1996-2001	2001-2006	
Non-Forested					-	
Other Land			3,063	6,765	3,657	
Forested						
Non-productive			26.250	19,134	28,691	
Productive			200,878	203,608	269,682	
Protection			18,231	2,928	9,521	
Production Forest						
	6&S/NSR		8,739	3,513	2,065	
	Depleted				60	
	Working Group	WGs included				
	Pw	Pw	9.757	13,391	23,390	
	Pr	Pr	2,445	2.211	3,914	
	PI	P <sub>I</sub> +P <sub>S</sub>	387	455	383	
	S	Sb+Sw+Sr	3.619	3.099	3,914	
	В	В	4.783	5,670	6,674	
	Ву	By (96-01 & 01-06)		150	161	
	C	Ce+L	4.484	6.343	8,099	
	He	He	2.137	3,243	6,988	
	Po	Po	47,973	50.616	60,938	
	Bw	Bw	12.290	12,510	11,205	
	Mh	SI (selection)+Ma (90-96)	74,161	68,632	100,613	
	H (OH)	O+Ms+A+Be+Bd+By(90-96)	11,872	30,848	31,759	
Total Production Forest			182,647	200,680	260,161	
Total Forested Land			227,128	222,741	298,373	

TMP Tables 4.8.2 TMP Table 4.8.1 FMP-1 & 2
Bancroft and Bancroft Bancroft Minden
Whitney



### 2006 Independent Forest Audit

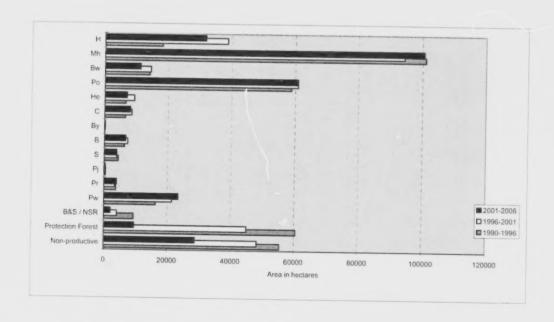
Table 1 - Summary of Total Area Under Management

### Past and Current Plans - Crown Managed

MU: Bancroft, Whitney, Minden & Frost (1990-1996), Bancroft & Minden (1996-2001) and Bancroft Minden (2001-2006)

				Area in hectares		
Land Type			Past Plans		Current	
		Plan Term	1990-1996	1996-2001	2001-2006	
Other Land			3,665	7,367	3.65	
Forested						
Non-productive			55,449	48,290	28,69	
Productive			306,298	312,131	269.68	
Protection			60,484	44,986	9.52	
Production Forest					0,02	
	B&S/NSR		9.349	4.082	2.06	
	Depleted				6	
	Working Group	WGs included			0	
	Pw	₽w	16,282	21.388	23.39	
	Pr	Pr	3,707	3.374	3.91	
	Pj	Pj+Ps	390	458	38	
	S	Sb+Sw+Sr	4,386	3,918	3,91	
	В	В	6.339	7,364	6.67	
	Ву	Ву	55	199	16	
	C	Ce+L	6,564	8.547	8.099	
	He	He	6.667	9,350	6.98	
	Po	Po	58.802	60,939	60.938	
	Bw	Bw	14,089	14,465	11.205	
	Mh	Mh+SI (selection)	101,108	94,412	100,613	
	Н	O+OH+H+Ms+A+Be+Bd	18,076	38,650	31,759	
Total Production Forest			245,814	267,145	260,161	
fotal Forested Land			361,747	360,420	298,373	

TMP Tables 4.8.2 TMP Table 4.8.1 FMP-1 & 2
Bancroft, Whitney, Bancroft & Minden Bancroft Minden Minden & Frost



Forest Unit		Forest	Main	Site	Silvicultural	FRI Parameters	Additional
Code	Name	Type	Working Group	Type(s)	System	& Criteria	Information
ancroft Min	den (2001-2006)						
E1	Cedar Shelterwood	Comfer	Cedar	Femiles 21, 22, 26, 29, 30, 32	Shelterwood	Ce+Ab+Ew++ 5 and Ce+-Sb+La+Bf and Mb+Ab+Aw+Bd+Be+Ch+Ew+Iw+Qr+Yb+Ow+Ob+Ile+ 5	Stands dominated by Cedar
MI	Upland Conifer	Conifer	Sprace White	Ecosites 11, 13, 14, 16-22, 27,	Clearcut	Pw (Pr) Pt (Ps) Sh) Sw (Ce) La (Oc) He (B) - 5 and	Confer mixedwood stands composed primarily of Spruce a
	Clearcut			29, 30, 32-35 Ecosites 14, 17, 22-30, 35		Pa+Bw<0.4	Balsam Fir
DI	Hardwood Selection	Tolerant	Hard Maple	Ecosites 14, 17, 22-30, 35	Selection	Mh (Ab) Aw (Bd) Be (Ch) Ew (W (Qr) Yb) (Dw (Oh) He - 5 and Po) Bw (Bf) - 3 and (Sc - "X" or Sc - "1" or Sc - "2")	Quality tolerant hardwoods on site classes X, 1 or 2
		Hardwood				and Age —80 and Stk —0.4. Some stands selected manually	
						using FR1 narameters	
D2	Hardwood Selection 2	Tolerant	Hard Maple	Ecosites 14, 17, 23-30, 33, 35	Selection	Mh+Ah+Aw+Bd+Be+Ch+Ew+Iw+Qr+Yb+Ow+Oh+IIe+-5 and Po+Bw+Bf+-3 and (Se+-"X" or Se+-"1" or Se+-"2")	Younger tolerant hardwood stands that require more subsicultural work (e.g. stand improvement)
		Hardwood				and (Age = 80 and Stk = 0.5 or Age = 80 and Stk = 0.5)	The state of the s
						Some stands selected manually using FRI parameters	
D4	Hardwood Shelterwood		Hard Maple	Ecosites 14, 17, 21-30, 32-35	Shelterwood	Mh+Ah+Aw+Bd+Be+Ch+Ew+Iw+Qr+Yh+Ow+Oh+Ile+-5	Tolerant hardwoods generally on site class 3
F1	Hemlock Selection	Hardwood Coniter	Hemiock	Ecosites 14, 17, 23-25, 27, 28,	Selection	Some stands selected manually using FRI parameters  He - 4	Stands having at least 40% Bernlock
				3()			
ST1	Intolerant Clearcut	Intolerant	Poplar	Ecosites 11, 14, 16-18, 20-27, 30-33-35	Cleateut	Po Bw ~ 0.4	Stands composed predominantly of Trembling Aspen and White Birch mixed with small amounts of Red Mapie.
811	Lowland Flandwood	Tolerant	Ash	Feosites 32, 34, 35	Selection	Ahr Ew 4 and Abr Ew (Ms) Yb Shi Ce (La) Bl	Stands composed of species that are associated with moist
	Selection	Hardwood					wet sites. Will not be harvested
W 1	Mixedwood Clearcut	Mixed	Soft Mapie	Feosites 14, 16-18, 21 30, 33	Clearcut	FU -'MWT'	Mixed stands composed of even aged species that will be managed under the clearent silvicultural system.
	Y-view (Country	f ( a	Other Conifer	Ecosites 16, 22, 31-35	Clearcut	Cer Lar Shr Abr Ew - 4 and Shr Lar Br - Ce	Low lying conifer species on moist to wet sites. Will not
CI	Lowland Comfer Clearcut	Comfet	Caner Connec				harvested
R1	Red Oak Shelterwood	Tolerant	Maple All	Ecosites 13, 14, 17, 18, 21,30	Shelterwood	Or -Pw and QrPr and Qr Fle and Qr Sw and Qr 3	Stands composed of Red Oak and Oak associated species
91	Jack Pine Clearent	Hardwood Comfer	Jack Pric	Ecosites 11, 13, 15, 19	Clearcut	WG - "Py"	Stands composed of Jack Pine (generally plantation)
	Sack Pine Clearetti	Omit					dominated)
R2	Red Pine Clearent	Comfer	Red Pine	Feosites 11-14, 18, 20, 21, 27	Clearcut	Pr -Pw and Pr Sw and Pr Qr and Pr Py and Pr Sh and	Stand composed primarily of Red Pine (plantation domina
WI	White Pine	Comfet	White Pine	Fcosites 11-14, 16-18, 20-22,	Shelterwood	Pw - Pr and Pw - He and Pw - Sw and Pw - Pj and	Stands where the main tree species is white pine where
W.1	Shelterwood	Counter	William Fine	24 30, 35	1	Pw -Qr and (Pw+Pr 1) and (Pw+Pr+He+Sw+Pj+Qr) *	stocking is relatively uniform
						5tk - 0.4 or Pw - Pr and Pw - He or Pw - Sw and Pw - Qr	
						and Pw - Sh and Pw (c and Pw Pt and (Pw+Pr 3)	
ancroft (19	96-2001)				-		
B1	Black Ash	Lowland	Ab		Not managed	WG - Ab	All black ash stands were included in the black ash forest and removed from the M.A.D. fand base.
7.1	Cedar	Lowland	Ce		Shelterwood	WG - Ce and Sc - '2"	All Site class II and better stands of the Cedar working gro
E1	CGAI	Consier	1		The state of the s		to be managed under the group shelterwood system.
						WG - He	the state of the s
IE1	Hemlock	Conter	He		Selection	WG -He	Hiemlock is found in relatively pure patches and stands in varying mixtures arrangements with tolerant hardwood-
181	Red Oak	Mid	(.)g		Shelterwood	WG - Oh with a significant Or species component	Although red oak is found in association with tolerant
		Tolerant					hardwoods, it has different silvicultural requirements and
PJ1	Jack Pine	Conifer	Pi		Not managed	WG -Pt	Two natural origin jack pine stands were identified for
31	Jack Pilic	Conner	,				protection in recognition of their rarit
POI	Popiat Mixed Wood	Mixedwood	Pu, Bw, B		Clearcut	WG - Po, Bw, B	Poplar, white birch and balsam fir occur on similar sites w similar species associations and are well managed under the
							cleasent silvicultural system
PR1	Red Pine	Conster	Pr		Clearcut	WG - Pr	Plantation and natural origin red pine stands with similar
		-			-	WG Pa Po Pw Pr Swiffe : 12m2 ha	characteristics managed under the clearcut system. Stands from the white and red pine working groups with
bW.1	White Pine Clearent	Comfet	Pw, Po		Clearcut	WG - PA Po PW PP SW He - 12m2 na	madequate conder stocking for shelterwood management
M.5	White Pinc	Coniter	Pw		Shelterwood	WG - Pw. Pw Pr Sw (He >12m2 ha	Well stocked stands from the Pw working group with a significant confer component managed under the 3 cut
	Shelterwood						uniform shelterwood system
SB1	Black Sprace	Comfer	Sh		Not managed	WG - Sb. Species include Sb. Ce, Sw. B. Ms, Po and Bw.	Small relatively pure, low merchantability stands scattere
							across the landscape are unsuitable for management.
SL1	Selection	Tolerant	Mh. By. Be. Bd		Selection	WG - Mh. By, Be, Bd. Species include Mh. By, Be, Bd. Aw	Tolerant hardwood stands managed under the single tree selection system. Former clearcuts - 40 yrs old withdraw
		Hardwenst				He, Bw, Ms, Po and Or	from the MAD land base until first improvement cut.
sW:	White Spruce Mixed	Mixedwood	I Sw. Ms		Clearent	WG - Sw, Ms. Species include Sw, Ms, Po, Bw & B	White sprace working group and white sprace soft maple
	Wood						mixtures found on similar sites with similar species
Bancroft (19	19(I-1996)	Titlerdo est	Tab	T	Clearent	WG = Ab	T
in i	Black Ash Balsam Fir	Hardwood	Bi		Clearcut	WG = BI	
du	White Birch	Hardwood			Clearcut	WG - Bw	
2	Cedar	( onder	(e		Shelterwood	WG - Ce SCIII	Group shelterwood 4 cut uniform shelterwood
le M	Hemiock Other Hardwoods	Conifer	He Ms		Shelterwood	WG - He WG - Ms Mb = 20xts	The controller Sucherways
Dr.	Red Oak	Hardwood	Ot:		Shelterwood	WG - Or	2 cut uniform shelterwork
Pa	Jack Pine	Comfer	Pj		Not managed		
Po	Poplar	Hardwood	Pc.		Clearent	WG - Pr. Conder composition v - 40%	1
w l (cc)	White Pine ev ag	Coniter	Pr Pw_Po		Clearent	W.G Pr. Contler composition = 40°, W.G Pw. Contler composition = 40°,	
2w2 (she)	Whate Pine shelterwood		Pu		Shelterwood	WG Pw. Pr. Confer composition + 40%	4 cut uniform shelterwood
			65	-		W. Sh	
Sb Sel	Black Spruce Selection	Tolerant	Mh. By		Selection	WG - Sh WG - Mh with potential for high quality	Single tree selection
100		Hardwood					
Su.	White sprace	Condet	511		Clearent	WG - Su	
Whitney (19	190-1996) Balsam Fir	Coniter	Test .	1	Clearcut	WG - Bt and Sp = 30%	
Bu	White Birch	Flatdwood	Bw		Cleatent	WG - Bu	
le	Hemlock	Conites	He		Shelterwood	WG = He and He == 50".	Uniform sheltetwood
Pi	Jack Pine	Comiler	P <sub>1</sub>		Clearent Clearent	WG = P <sub>1</sub> WG = P <sub>2</sub>	Conversion to white pine due to poor forti
Pr.	Poplar Red Pine	Hardwood Comfer	Po		Shelterwood	WG - Pr	Uniform shelterwood
N	White Pine	Conster	Pw		Shelterwood	WG - Pw 4 other WG containing sufficient Pu	Uniform sheltetwees
Thwd	Tolerant Hardwoods	Tolerant	Mh		Selection	WG = Mh, By, Be and all other hardwoods	Single free and group selection
		Hardwood	Su		-	WG - S of Sw OR WG - B with 30% Sp	Uniform shelterwood cut as eticounteted

Source

FMPM FMP - 8 TMPM Tables 4-11, 4-13, 4-14-8, 4,15

### 2006 Independent Forest Audit

Table 3 - Summary of Planned & Actual Harvest Volumes

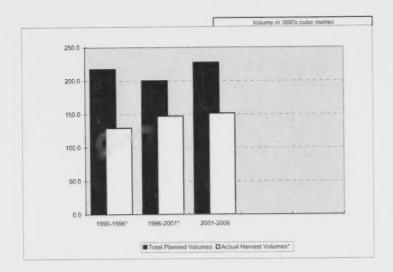
MU: Bancroft & Whitney (1990-1996), Bancroft (1996-2001) and Bancroft Minden (2001-2006)

### Average Planned Annual Harvest Volumes

		Volum	ne in cubic metres (	(m3)	
		Past P	lans	Current	
Specia	25	1990-1996	1996-2001	2001-2006	
Pw		10497.4	8318.0	17234.4	
Pr		1880.6	989.8	11654.6	
Pj	Pl Ps	0.0	19.0	179.7	
S	Sw Sb	7744.6	5211.6	5923.7	
Bf		11062.0	11031.4	6468.4	
Ce	Ce. Oc	1988.0	3207.6	1130.2	
L	L. Ta	0.0	468.4	316 6	
He	6, 10	7220 2	7783.0	6948 3	
Po		55053 0	45883.6	59195.5	
Bw		27001.6	24352 4	18065.0	
Mh	1990-1995 Whitney only includes Mh. By & Oh.	73600.6	47836 0	61612.9	
UH	Ma, Ow Or Bd Be, by, Bt, Oh Iw. Chb	19598.8	20964 4	30808.2	
LH	Ms. Ab Aw. Ew Lh	2102 4	24070.6	7884.7	
Total F	Planned Volumes	217749.2	200135 8		
Source:		(1990-1995)	(1996-2001)	FMP-21 (2001-2006) Bancroft Minden	

### Actual TREES Harvest Volumes

		Volu	me in cubic metres	(m3)
		Past	Past Plans	
Specie	as	1990-1996	1996-2001	2001-2006
Pw		11414.2	10576 4	8994 4
Pr		2418.3	2936 8	6767.2
Pi	Pt. Ps	121.7	274.6	963 2
9	Sw Sb	5819.5	3613.8	4254 0
Bi	OH GO	782.7	1365.0	1671 5
Ce		53.3	80.2	115.0
		0.0	1.8	01
He		1743.7	2082.6	1143.1
Po		36618.2	61347.2	57007.3
Bw		9568 5	16318.8	8899.5
Ma	Mh. Ms. Mr. Ma: also includes all other hardwoods for 1990-1996	60766 2	36564.4	49490.9
UH	Cay Or Bd Be By Bt Oh by Chb	0.0	11027.8	10905.9
		0.0	684.6	686.7
LH	Ab Aw Ew Lh			
Total A	Actual Volumes	129306 2	146874.0	
Source:		RPFO's-4 (1990-1995 &	RPFO-4 & 4a (1996-2001)	AR-3 (2001-2002) 2002-2003, 2003-200



<sup>\*</sup>Banceth Table 4.17 updated to May 18, 1994

"Winney Table 4.17 updated to May 18, 1993

"Winney Table 4.17 updated volumes are greater than reported in RPFO-4. Decision made to use Table 4.17 as the source document."

#### 2006 Independent Forest Audit

### Table 4 - Summary of Planned & Actual Depletion Area Past and Current Plans

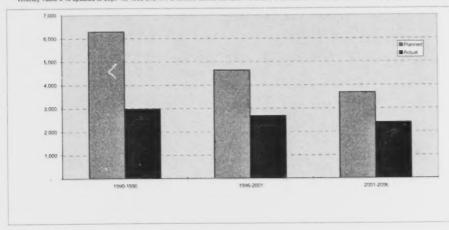
#### Bancroft & Whitney (1990-1996), Bancroft (1996-2001) and Bancroft Minden (2001-2006) MU:

Annualized		

Pla	nned Annual		a				letion Area		
T	A	rea in hectares					hectares		
	Past P	lans	Current		Past F	Plans		Curr	
Plan Term	1990-1996	1996-2001	2001-2006	1990-	1996	1996-	2001	2001-	
Forest Unit				Harvest	Natural	Harvest	Natural	Harvest	Natural
2001-2006									
'EI			48					3	
CMI			141	1			1	12	
IDI		1	879					923	56
HD2			957					199	
ID4			185	- 1			1	29	
IEI	1		13					15 781	1
NTI			573	-				701	
LHI								108	
MW1			217					100	
OCI								81	1
DR1			214					17	
PJI			14					90	
PR2			155 273					132	3:
PW1			213					100	
1996-2001									
AB1		. 1				-			
CEI		107				4			
HEI		144				16			
ORI		91				14			
PJI									
POI		1.019		i		872	5		
PRI									
PWI		46							
PW2		148				189	5		
SBI									
SLI		2,964		1		1,528	4		
SW1		119				53	-		
1990-1996	6								
Ab B	180			34					
Bw	405			154					
Ce	21							1	
He	108			33					
Oh	24			7					
Or	66								
Pi									
Po	1,336			518	-				
Pr	31			13					
Pw1 (cc)	16			13	4				
Pw2 (she)	271			90	-				
Sh	28			-					
Sel	3,652			2.077	*				
Sw	30			1					
PF (protection)	111			37					
Total Area	6,284	4,638	3 669	2,978	-	2,678	14	2,388	13
Source:	Tables 4 15	RPFO-1 and	FMP-18	RPFO's-1	RPFO's-1	RPFO-1	RPFO-1	AR-1	AR-1
Source:	"Bancroft and "Whitney RPFO-1 (1990-1995) Whitney only	Table 4 15 (1996-2001) Bancroft	(2001-2006)	(1990-1995 & 1995-1996) Bancroft and Whitney			(1996-2001) Bancroft	(2001-2002, 2002-2003, 2003-2004, 2004-2005)	(2001-2002, 2002-2003, 2003-2004)

<sup>\*</sup> Bancroft Table 4.15 updated to May 18, 1994 but RPFO reflects original Table 4.15

\*\* Whitney Table 4.15 updated to Sept. 16, 1993 and RPFO reflects same, 553 ha of Po & Bw PF forecast for harvest (111 ha annualized) but no M.A.D. calculated



MU: Bancroft & Whitney (1990-1996)

MU: Bancroft (1996-2001)

		Protectio	n Forest		Pro	duction Fo	rest				Protectio	n Forest			eduction Fo		
Norking	Age	110000		Unav	ailable	Stage of	Avail	able	Working	Age			Unava	ilable	Stage of	Avail	
Ciroup	Class	(ha)	(m <sup>3</sup> )	(ha)	(m')	Mgmt.	(ha)	(m)	Group	Class	(ha)	(m')	(ha)	(m)	Mgmt.	(ha)	(m)
rroup		(110)	(sic)	(Ha)	-		30		Pw								
	PFR									B&S						495	
	B&S	1 1			1		566	- 1							1	92	
	1 to 20						238			1 to 20						200	
	21 to 40						225			21 to 40							
	41 to 60	1 1		-			1170		1	41 to 60						2147	
	61 to 80	1 1					2940			61 to 80						4950	
	B1 to 100						3722			81 to 100						4922	
							1243	- 1		101 to 120						987	
	101 to 120						189			121 +						74	
	121 +	1 1					100			121						0	
-	WG Subtotal	232	0	0	- 0	- 0	10323	0		WG Subtotal	47.7	0	.0	0	0	13867	
							0		Pr							141	
	B&S						195	1	1	B&S						464	
	1 to 20		1		1	1	534	- 1	1	1 to 20		1					
	21 to 40						720			21 to 40						686	
	41 to 60	1 1					289			41 to 60					1	446	
	61 to 80	1 1			1		527	- 1	1	61 to 80					1	522	
							335	- 1		81 to 100					1	93	
	81 to 100				1		40			101 to 120				1	1	- 0	
	101 to 120				1		40			121 +					1	0	
	121+						0			121						0	
	WG Subtotal	137	0	(	- (	0	2640	.0		WG Subtotal	69	0	0	- (	0	2352	
							0		Pj	1100							
Ps.	B&S				1		18		mar.	B&S					1	109	
	1 to 20				1	1	0			1 to 20	1				1		
	21 to 40				1	1	387			21 to 40					1	198	
	41 to 60				1	1	0		1	41 to 60	1				1	148	
	61 to 80	1			1	1	0			61 to 80	1				1	0	
					1	1			1	81 to 100					1	0	
	El to 100				1		0				1				1	0	
	101 to 120	1			1		0		1	101 to 120	1				1		
	121 +						0			121 *	1					0	
						_	- 0		-		-	0	-		1	455	-
	WG Subtotal	0	0	(	(	(	405	0	Sp	W G Subtota	-			-	1	1 100	_
p					1		293		Nh Sin Si	B&S						187	
Su & S	B&S	1			1		295		200 200 201	1 to 20	1	1	1	1	1	37	
	1 to 20				1		1 3				1			1	1	52	
	21 to 40				1	1	27			21 to 40	1			1	1	580	1
	41 to 60				1		243		1	41 to 60	1			1	1		
	61 to 80				1	1	1336		1	61 to 80	1	1		ı	1	1688	
	B1 to 100		1		1	1	1192	1 1		81 to 100	i .	1	1	1	1	518	
					1	1	693		1	101 to 120	1	1	l	1	1	102	
	101 to 120	1			1		119			121 +	1	1		1	1	70	
	121 +					1	119	1 1		121				1		0	
	WG Subtota		0			1	3912	0		WG Subtota		0	(		0	3233	
_	WG Sumora	1	-				0		В	T							
	B&S				1		178			B&S		1	1		1	102	
	1 to 20				1		16			1 to 20						11	
	21 to 40						52			21 to 40						267	
							398			41 to 60				1		3930	
	41 to 60						2125			61 to 80						1046	
	61 to 80									81 to 100						245	
	81 to 100						1699									144	
	101 to 120		1	1	1	1	424			101 to 120	1	1	1	1	1	22	
	121 +				1		69			121 +				1		- 22	
	WG Subtota				0	0	0 4961	0		W G Subtota	1	0 (	1		0	0 5768	
	T Sucreta	-	-	-	1	1	0		He	T							
	B&S						0			B&S						27	1
	1 to 20	1		1	1	1	0	1		1 to 20	1	1	1	1	1	1 1	2
							0			21 to 40			1			55	
	21 to 40						86			41 to 60					1	224	1
	41 to 60															70	
	61 to 80			1	1		580			61 to 80				1		761	
	K1 to 100						496			81 to 1/8		i					
	101 to 120						406			101 to 12	0					734	
	121 +			1			569			121 +						755	
	10.1						1 0				i						1
		al A		9	0	0	0 2137	0		WG Subtota	al 73.	4	1	0	0	0 3270	1
	WG Subtota																

Table 5 (Continued)

MU: Bancroft & Whitney (1990-1996)

Continued MU: Bancroft (1996-2001)

Continued

		Protection	n Forest		Pro	duction For	rest				Protectio	n Forest			duction Fo		
Working	Age			Unava		Stage of	Avai	lable	Working	Age			Unava	ailable	Stage of	Avail	lable
Group	Class	(ha)	(m1)	(ha)	(m <sup>1</sup> )	Mgmt	(ha)	(m <sup>1</sup> )	Group	Class	(ha)	(m')	(ha)	(m)	Mgmt.	(ha)	(m')
e	C 1000						0		Ce								
1.61	B&S						34	1	Cent	B&S						86	
	1 to 20						0			1 to 20						61	
	21 to 40						13			21 to 40						26	
	41 to 60					1 1	154			41 to 60						321	
	61 to 80	1				1	1010			61 to 80						2635	
	81 to 100						1617			81 to 100						2152	
	101 to 120	i 1				1 1	1310		1	101 to 120						877	
	121 +						380		1	121 ±						260	
	121 -						0									0	
-	& G Subtotal	96	.0	0	0	.0	4518	.0		VG Subtotal	53.2	0	- 0	0.	- 0	6419	
1	PFR						39		SI							7002	
election	B&S						71		Selection	B&S						2092	
Lik Ma	1 to 20						0			1 to 20						413	
eludes.	21 to 40						42			21 to 40						12099	
ardwoods	41 to 60				l		1114		1	41 to 60							
e Whitney	61 to 80						14242			61 to 80						33799	
	81 to 100					1	6369			81 to 100						17137	
	101 to 120						659			101 to 120						3194	
	121 +						2701			121 *						1857	
lancroft	All-aged						48995								_	0	
	WG Subtotal	[49]	0	- 0	- 0	- 0	74232	0		WG Subtota	98.8	- 0	(	(	(	70723	
0	PFR						42		Po								
	B&S	1 1					2955	1 1	1	B&S				1	1	0	1
	1 to 20						610	1 1	1	1 to 20				1	1	2654	
	21 to 40				1		3601	1 1	1	21 to 40			1	1	1	1381	
	41 to 60						15962	1	- 1	41 to 60				1	l l	29454	
	61 to 80	1 1				1	24262	1 1	1	61 to 80	1		1	1	1	15817	1
	81 to 100					1	3163	1 1	1	81 to 100	1		1		1	1208	
	101 to 120				1	1	333	1 1		101 to 120	1		1	1	1	101	1
	121 +					1	0	1 1	1	121 +						0	1
							0									0	
	WG Subtotal	8590	.0	- 0		) ()	50928	0		WG Subtota	1504.2	(	-	3 (		50616	
Bw								1 1	Bw	0.00	1				1	282	
	B&S			1	1	1	678	1 1		B&S	1	1	1	1	1	65	1
	1 to 20				1		16	1 1		1 to 20		1	1	1	1	197	
	21 to 40	1		1	1	1	(	1 1		21 to 40		1	1	1	1	7797	
	41 to 60			1	1	!	2571	1 1		41 to 60	1	1	1	1	1	3503	
	61 to 80			1	1	1	8054	1 1		61 to 80	1	1	1	1	1	698	
	81 to 100			1	1	1	1483	1 1		81 to 100		1	1	1	1	65	
	101 to 120		1		1	1	172	1 1		101 to 120	1		1	1		65	
	121 +				1	1	(	1 1		121 +			1	1			1
	WG Subtota	2925	-			0 (	12965	0		WG Subtota	1 469.	(	)	0	D	0 12606	
OH	T Summer				-	_	(		OH	T							
Bancroft	B&S						3751		13, Ms. A. Be	B&S			1			638	
D 4th & Ab	1 to 20								Bild: By	1 to 20						24	
th metales	21 to 40						139			21 to 40						389	
H. Mh. Ms	41 to 60						1560			41 to 60				1		8414	
Ma Bs	61 to 80						5531			61 to 80						18805	
110 111	81 to 100					1	352			81 to 100						2875	9
di funtari	101 to 120						935			101 to 12						33	
Whethers See SI	121 +					1	170			121+						180	K-
-	1.21															(	0
	WG Subtota	6048		0	D .	0 (	1562			WG Subtot	al 612.	5	D	0	0	0 3137	3
ALL	•b+B	0		0	D	0 (	0 11		ALL			9		0	0		
	B&S	0		0	B	0	873			B&S		0	0	0	0	0 4050	
	1 to 20	0		0	D	0 (	8 [41]			1 to 20		0	0	0	0	0 365	
	21 to 40		1	0	D	0 (	520			21 to 40		0	0	0	0	0 386	
	41 to 60	1 0		0	0	0	0 2354	7		41 to 60		0	0	0	0	0 65559	
	61 to 80			0	0	0	6061			61 to 80		0	0	0	0	0 83476	
	81 to 100		)	0	0	0	0 2360	D		81 to 100		0	0	0	0	0 3062	
	101 to 120			0	0	0	621			101 to 12	0	0	0)	0	0	0 623	
	121 =	1 (		0	0	0	0 420			121.5		0	0	0	0	0 3220	0
All-aged			)	0	0	0	0 4899					0	0	0	0	0	0
					4	0	0 18264		and the same of	Tet	al 292			0		0 200680	2.0

Source: TMPM Tables 4 8 2 & 4.9 (1990, 1995) Bancroft & Whitney

Source: TMPM Tables 4.8.1 & 4.9 (1996, 2001) Bancroft

<sup>\*</sup> Table 4.9 in the 1990-1995 Bancott TMP did not include 111 ha of PFR. This area had to be added to the Pw, 81 & Po WGs for the total production forest area to match that shown in Table 4.8.2.

\*\*Table 4.9 in the 1990-1995 Whitney TMP included 1359 ha of Res in the summary of production forest by WG and age class. In order to draw a direct comparison between terms, this area is shown under its own heading for each WG. As a result, an equivalent area had to be subtracted from the lowest age class(es) of each WG for the total production forest area to match that shown in Table 4.8.2.

Management Unit: Bancroft Minden

Plan Term: April 1, 2001 to March 31, 2006

FMP-9 SUMMARY OF MANAGED CROWN PRODUCTIVE FOREST BY FOREST UNIT

FMP-9		Protection Protection		Production Forest							
Forest	Age			Unava	ailable	Stage of	Avai	lable			
Unit	Class					Manageme					
		(ha)	$(m^3)$	(ha)	(m <sup>3</sup> )	nt	(ha)	(m <sup>3</sup> )			
PW1	0-20			139		CT	2207.6	1103.5			
	21-40		1	18.2	918.2		218.6	4797.5			
	41-60	1 1		445.9	51736.1	CT	779.2	66331.5			
	61-80	1 1	1			FR	45.5	5971.5			
	61-80	579.7	30200.1	958.8	100695.7		596.4	87612.4			
	61-80	1 1		17.3	2193.4		166.8	24070.9			
	81-100			5.6	778.4		385.3	53806.7			
	81-100	336.1	21840.3	450.5	72080.7		3392.8	571798.3			
	81-100			37.4	6657.2		4159.9	608522.9			
	101-120					FR	446.2	49302.4			
	101-120	21.9	1652.7	952	178976.8		2041.7	355442.3			
	101-120	1 1	- 1	42.8	7318.8		1548.7	244002.3			
	121-140					FR	90.4	7685.3			
	121-140		- 1	34.2	8092.9		541.6	86063.4			
	121-140					SC	310.4	43858.5			
	141-160					FR	15.4	3146.2			
	141-160					PC	24.9	4050.6			
	141-160					SC	4.1	701.1			
Forest Unit		937.7	53693.1	3101.9	429448.2		20330	2218267.3			
PR2	0-20	2.8		1.1			909.6	740			
	21-40	10.3		95	6420.8		719	61400.3			
	41-60	66.69	3417.1	117.8	16716.8		758.5	119243.1			
17 6	61-80	426.5	26656.3	93.3	9034.4		872.2	141784.9			
	81-100			81.9	16242.3		583.8	108794.4			
	101-120			20.4	2575		87.8	19093.7			
Forest Unit		506.5	30073.4	409.6	50989.3		3930.9	451056.4			
PJ1	21-40						127.3	10472.6			
	41-60			3.1	677.4		185.1	21007.1			
	61-80			52.3	7333.3		13.6	1847.8			
Forest Unit				55.4	8010.7		326	33327.5			
HE1	1-999	87.4	10440.2	968.3	147244.3		5079.7	797040.7			
Forest Unit	Subtotal	87.4	10440.2	968.3	147244.3		5079.7	797040.7			
OR1	0-20			323.7		CT	78.5				
	21-40			40.1	1002						
	41-60			208.1	17574.9		77.2	5893.4			
	61-80	136.9	11560.2	3929.3	374944.6		3720.9	436782.8			
	81-100	362.9	26136.1	4773.8	474045.4		5084.7	727909.2			
	101-120			26.1	2539.5		96.8	9564.4			
	101-120	87.1	8787.2	186.5	19101.2	SC	771.7	120057.9			

Management Unit: Bancroft Minden Plan Term: April 1, 2001 to March 31, 2006

FMP-9 SUMMARY OF MANAGED CROWN PRODUCTIVE FOREST BY FOREST UNIT

	T	Protection		PRODUCTIVE FOREST BY FOREST UNIT  Production Forest						
Forest	Age Class			Unava		Stage of	Avail	able		
Unit		ha	m <sup>3</sup>	ha	m <sup>3</sup>	Manageme nt	ha	m <sup>3</sup>		
OR1										
(cont'd)	121-140	6.8	728.8	117.6	17895.9		254.3	33242.8		
	141-160 161-180	20.2	2262.4	- 1		SC SC				
D		614	49474.7	9605.2	907103.5	SC	10002 5	1222450 6		
Forest Unit	1-999	614		9003.2		$\overline{}$	10083.5	1333450.5		
LH1		60.7	5307.1		65435.1	$\vdash$	_			
Forest Unit		60.7	5307.1	902	65435.1		10.1			
CEI	0-20	- 1		29.8		PC	49.6			
	21-40	- 1	- 1	24.2	750 7	PC	33.8	691.4		
	41-60	0.0	040.1	24.3	759.7		79.2	4209.4		
	61-80	9.9	840.1	411.5	34881.2		607.8	45299.8		
	81-100	33.8	2673.9	732.6	57910.8		1842.1	190171.2		
	101-120	5.7	524.4	412.5	38082.3		554	51998.1		
	121-140	9.5	000.5	124.4	12605.7		236.2	18450.7		
	141-160 161-180	8.5	909.5	71.4	5335.8		9.1	655.4		
F 11-5		57.8	4947.9	33.6 1840.1	2165.5 151741		3411.8	311476		
Forest Unit	0-20	37.0	4947.9		131741	$\overline{}$	3411.8	311470		
OCI				76.3						
	21-40	2.0	272.1	26.8	101460	1 1	- 1			
	41-60	2.9	273.1	111.3	10146.8		- 1			
	61-80	26.7	2607.4	1081.4	104944.8		- 1			
	81-100	36.7	3607.4	1243.5	128422.5	1 1	- 1			
	101-120 121-140	8.3	838.3	446.9	61574.7		- 1			
	141-160	- 1	- 1	81.4	6738.6 194.9	1 1	- 1			
P		47.0	4710 0	4.9		$\vdash$	$\overline{}$			
Forest Uni	1-999	47.9	4718.8	3072.4	312022.3	$\overline{}$	45570.2	(5(3100)		
HD1		53.9	8640.2	1843.4	320751.6		45570.3	6562108.8		
Forest Uni		53.9	8640.2	1843.4	320751.6	$\longrightarrow$	45570.3	6562108.8		
HD2	1-999	19.2	2649.6	3010.8	376635.2	$\overline{}$	36697.8	5614763.4		
Forest Uni		19.2	2649.6	3010.8	376635.2		36697.8	5614763.4		
HD4	0-20	4.5		7.8		PC	1000.6	5.		
	21-40	- 1	- 1			PC	1766.4	767.		
	41-60		20012	46.3	1533.5		308.1	25627.6		
	61-80	300.5	38863.5	1062.1	137578.2		3290.1	350392		
	81-100	172.9	25185.9	621.1	90933.7		4618.3	628684.		
	101-120	149.6	22739.2	65.6	9001.3		1031.3	131943.		
	121-140			66.6	11976.8		59.9	752		
	141-160			1.8	366	PC	53.5	4563.6		
	161-180					PC	81.4	7627.4		

Management Unit: Bancroft Minden

Plan Term: April 1, 2001 to March 31, 2006

FMP-9 SUMMARY OF MANAGED CROWN PRODUCTIVE FOREST BY FOREST UNIT

FMP-9	SUMMARY	Protection		Production Forest						
Forest Unit	Age Class			Unava	ilable	Stage of	Avai	lable		
Unit		(ha)	(m <sup>3</sup> )	(ha)	(m <sup>3</sup> )	Manageme nt	(ha)	(m <sup>3</sup> )		
HD4										
(cont'd)	181-200					PC	1.6	201.8		
Forest Uni	t Subtotal	627.8	86788.6	1871.2	251389.5		12211.2	1157382.8		
CM1	0-20			76.1			514.8	2.8		
	21-40		- 1	6.5	128.2		44.4	1125.		
	41-60			352.5	26482.3		1117.7	94621.4		
	61-80	31.4	3311.1	1130.1	119157.7		4952.5	563092.		
	81-100	25.5	76793.2	850.4	109886.4		2023.7	284441.9		
	101-120	8.1	1085.4	121.1	16979.4		739.4	92386.		
	121-140	4.3	619.3	92.5	13316		347.1	36031		
	141-160			37.7	2841.4					
	161-180			43.7	1398.8		4.9	561.		
Forest Uni	t Subtotal	69.4	81809.1	2710.7	290190.2		9744.5	1072263.		
INT1	0-20	15.5		678.2			3328.6	160		
	21-40			17	903.4		844.8	26586		
	41-60	81.6	6561.8	2677.9	193133.1		5097.1	466009.		
	61-80	4159.7	378420.4	7366.6	666732.3		33977.3	3771139.		
	81-100	1994.1	251244.8	1157.9	132123.1		12307.3	1491919.		
	101-120	127.5	17345.1	25.1	3401		836.3	92371.		
	121-140			80.2	4806		206.6	28237.		
Forest Uni	t Subtotal	6378.5	653572.1	12002.8	1001098.9		56597.9	5877866.		
MW1	0-20			2.4	3.8		270.8			
	21-40			8.9	303.6		73.9	2907.		
	41-60			802.1	68748.4		1308.9	119229.		
	61-80	22.3	2245.9	2755.2	277801.4		5520.3	610982.		
	81-100	38	4180.2	458.6	53534.4		3142.9	455356.		
	101-120			15.2	2181.2		268.9	38765.		
	121-140			9.7	1856.6		146.2	2463		
Forest Uni		60.3	6426.1	4052	404425.6		10731.9	1251872.		
Treet Om	Total	9520.8	998540.9	45445.6	4244965.4		214715.2	2668087		

### 2006 Independent Forest Audit

Table 6 - SUMMARY REPORT OF RENEWAL, TENDING AND PROTECTION OPERATIONS (RPFO-7)

Bancroft & Whitney (1990-1996), Bancroft (1996-2001) and Bancroft Minden (2001-2006)

		A	rea Summary of all	Forest Units (ha)		
Area is Annualized for the indicated period	1990-1	996	1996-2	901	2001-2	
Aled to Attitudined for the measure party	Planned	Actual	Planned	Actual	Planned	***Actual
newal						
generation						
Uneven-Aged Management						
Selection Cut - Harvest	3697.0	2090.7	3304.4	1544.0	1848.6	1142
Total Uneven-Aged Management	3697.0	2090,7	3304.4	1544.0	1848.6	1142
Even-Aged Management	T					
Natural Regeneration						
Clearcut	1322.8	446.1	1114.7	863.2	819.0	521
CLAAG		- 1	1			32
Strip Cut		- 1			1	
Seed Tree Cut	3.4					
Uniform Shelterwood Seed Cut	949.6	366.2	57.0	94.8	112.4	11
Subtotal Natural	2275.7	812.3	1171.7	958.0	931.4	96
Artificial Regeneration				i		
	604,6	248.0	570.0	175.0	233.4	9
Planting	(11.4.17	240.00				
Seeding direct	30.0					
with site preparation	40.0			32.2	53.4	
Scarification	674.6	248.0	570.0	207.2	286.8	- 0
Subtotal Artificial	2950 31	1060.3	1741.7	1165.21	121824	106
Total Even-Aged Management	6647.3	3151.0	5046.11	2709.2	3066.8	220
Total Regeneration	0047.3	3131.0	30,000,1	2/07.2	200000	
te Preparation			370.1	70.0	136.0	1
Mechanical	288.0	112.1		9.8	102.0	
Chemical	93.4	20.5	54.4 136.1	0,0	28.0	3
Prescribed Burn	314.7	48.1	560.6	79.8	266.0	
Total Site Preparation	696.0	180.7	300.0	(4,8)	200.0	
ending						
Cleaning			466.41	217.0	190.0	11
manual	342.0	32.6	455.8		104.0	1:
chemical - ground	8.8	41.2	74.6	89.6	104,0	1.
- aerial						
mechanical		7.0				
prescribed burn						
Spacing, pre-commercial thinning, improvement cutting						
even-aged	538,2	79.8	447.9	99.0	20.0	
uneven-aged	801.6	1833.2	3304.4	1074.8	1136.4	10
Cultivation						
Pruning						
Total Tending	1690.6	1993.7	4282.7	1480.4	1450.4	14
rotection (Insect Pest Control)						
accelerated harvest						
salvage						
manual protection						
ground insecticide		74.9			1	
aerial insecticide						
Total Protection		34.9				
Source:	TMP 4.19	RPFO's-7	TMP 4.19	RPFO-7	FMP-25	AR-6 (2001-20
	(1990-1995)	(1990-1995) &	(1996-2001)	(1996-2001)	(2001-2006)	(2002-2003;
	*Bancroft and	(1995-1996)	Bancroft	Bancroft	Bancroft Minden	2003-2004)
	**Whitney	Bancroft & Whitney				AR-7 (2004-20

<sup>\*</sup> Bancroft Fable 4.19 updated to October 15, 199;

Bancroft Minder

<sup>\*\*</sup> Whitms Table 4.19 updated to September 17, 199.

\*\* Whitms Table 4.19 updated to September 17, 199.

\*\* Whitms Table 4.19 updated to September 17, 199.

\*\* 2001-2006 actual areas are annualized from 4 years of reporting for all operations. There are some minor differences between to-date values reported in AR-7 for 2004-2005 and cumulative current values of reported for 2001-2002, 2002-2003, 2003-2004, and 2004-2005. These differences are most likely due to the revised annual reporting format for 2004-05 (2004 FMPM), therefore the reported cumulative current values will be viewed as correct. Totals do NOT include 130 ha of planting retreatment, 210 ha of supplemental planting. 169 ha of supplemental mechanical SIP or 27 ha of supplemental chemical ground SIP reported during the period from 2001 to 2005

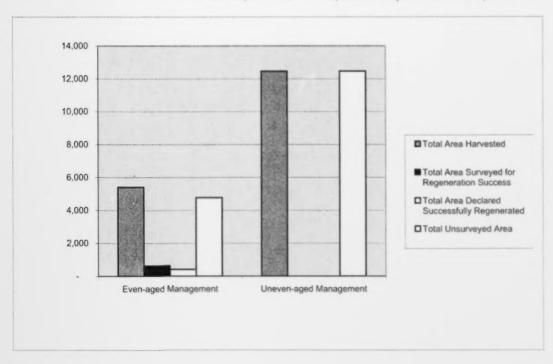
### Table 7 - Harvested Area Successfully Regenerated - Summary of All Forest Units

### MU: Bancroft & Whitney (1990-1996)

	AREA IN HECTARES (All Other Forest Units Combined)	AREA IN HECTARES (Bancroft: Sel FU; Whitney T hwd FU)
	Even-aged Management	Uneven-aged Management
Total Area Harvested	5,403	12,464
Total Area Surveyed for Regeneration Success	640	4
Total Unsurveyed Area	4,763	12,464
Total Area Declared Successfully Regenerated	409	
Total Area Surveyed Not Successfully Regenerated	231	4
NSR		-
B&S		4
Not Available for Regen. (eg. Roads & landings) Other	-	-
Percent of Area Surveyed Declared Successfully Regenerated	63.9%	

Source:

RPFO-1 (1990-1995; 1995-1996) & actual survey results from 1998 to present



### 2006 INDEPENDENT FOREST AUDIT

# COMPARISON AND TREND ANALYSIS OF PLANNED VS. ACTUAL FOREST OPERATIONS

## MINDEN MANAGEMENT UNIT & BANCROFT MINDEN FOREST

June 2, 2006

Prepared by:

Nick Baggs, R.P.F. N.G.B. Forest Manag

### Comparison and Trend Analysis of Planned vs. Actual Forest Operations

### Minden Management Unit & Bancroft Minden Forest

June 2, 2006

#### Introduction

This report has been prepared in accordance with Appendix C of the Ontario Ministry of Natural Resources Independent Forest Audit Process and Protocol (IFAPP) Copyright (c) Queens Printer, February, 2006. The Comparison and Trend Analysis (CTA) is intended to summarize and compare planned with actual operations carried out during the five-year term of the current forest management plan (FMP) as well for the two preceding five-year terms and identify significant trends over time.

The report is intended to support the assessment of forest sustainability and the achievement of management objectives as specifically described in Criteria 7.4 of the IFAPP. Also, in accordance with Appendix C, this report has been prepared as a stand-alone document since the Report of Past Forest Operations (RPFO) is not yet available for the current term. It does, however, utilize text, information and identified trends from published RPFOs for the previous terms.

Tables 1 to 7 in this report were prepared specifically for the Independent Forest Audit and contain information from current and previous plans, RPFOs and annual reports while FMP-9, originally developed for the 2001-2021 FMP for the Bancroft Minden Forest, is provided in its original format. Planned and actual levels of achievement in Tables 3, 4 & 6 have been annualized to facilitate comparison between terms of unequal duration and the current term for which complete reporting of operations is not yet available. Areas contained in Tables 1 and 5 reflect only the managed Crown land portion of the management unit as defined in the 1996 Forest Management Planning Manual for Ontario's Crown Forests (FMPM). Tables A, B & C, contained within the body of the text, were prepared to facilitate the comparison and identification of trends.

Normally, each CTA five-year term would correspond to the five-year terms of the current FMP and two preceding Timber Management Plans (TMP) and/or Forest Management Plans (FMP). For the Minden Management Unit (MU), this approach was modified for the following reasons:

- The production of separate Timber Mara, ement Plans (TMP) for both the Minden and L.M.
   Frost Centre Management Units (MU) aring the period from 1990 to 1995,
- The production of Contingency Management Plans (CMP) for both the Minden and L.M. Frost Centre MUs covering a period of one year from 1995 to 1996,
- The amalgamation of the Minden and L.M. Frost Centre MUs in 1996, resulting in the production of the 1996-2001 FMP for the amalgamated land base of the Minden MU, and
- 4) Further amalgamation of the Minden and Bancroft Management Units in 2001 to create the larger Bancroft Minden Forest, managed by the Bancroft Minden Forest Company Inc.

CTA terms were thus defined on the basis of common strategic direction and land base rather than fixed five-year terms. For example, the 1995-1996 CMP for the Minden MU shares strategic direction and common elements with the 1990-1995 TMP for the Minden MU. Similarly, the 1995-1996 CMP for the L.M. Frost Centre shares direction and common elements with the 1990-1995 TMP for the L.M. Frost Centre. Using the land base of the amalgamated Minden MU (1996) as the basis for comparison

between terms, it was therefore necessary to consider all four of these plans within the 1990 to 1996 term.

Accordingly, the 1996 to 2001 Minden FMP was used as the basis of reporting for the five-year term from 1996 to 2001 while the 2001-2006 FMP for the larger Bancroft Minden Forest was used to report on the five-year current term from 2001-2006. Although the area of the latter reflects further amalgamation, the land base for the current term provides the common linkage between CTAs for the Minden and Bancroft MUs and best reflects the current management of these two forests subsequent to 2001.

Table "A" following shows the duration of the selected terms and demonstrates their relationship to the corresponding management plans used in this CTA:

Table A – CTA Term Duration and Associated Management Plans for the Minden MU, L.M. Frost Centre MU and Bancroft Minden Forest

CTA Term	Duration in years	Management Plans	Author
1990-1996	6	1990-1995 TMP for the Minden Management Unit	MNR
		1990-1995 TMP for the L.M. Frost Centre Management Unit	MNR
		1995-1996 CMP for the Minden Management Unit	MNR
		1995-1996 CMP for the L.M. Frost Centre Management Unit	MNR
1996- 2001	5	1996-2001 FMP for the Minden Management Unit	MNR
2001-2006	5	2001-2006 FMP for the Bancroft Minden Forest	BMFC

The 1990-1995 TMPs for both the Minden and L.M. Frost Centre MUs as well as the 1996-2001 FMP for the Minden MU were prepared by MNR using the 1986 *Timber Management Planning Manual for Crown Lands in Ontario* (TMPM). Most recently, the 2001-2006 Forest Management Plan for the Bancroft Minden Forest prepared by Bancroft Minden Forest Company Inc. was developed in accordance with the FMPM (1996).

### **Summary of Total Area under Management**

Table 1 summarizes the Total Area under Management for the current term and two preceding terms. Land type areas are for Managed Crown land only. Tables from the 1990-1995 TMP for the Minden and L.M. Frost Centre MUs, the 1996-2001 FMP for the Minden MU and the 2001-2006 FMP for the Bancroft Minden Forest were used to define the land base under management at the beginning of each CTA term. Since twelve specified working groups were used to summarize the area of production forest under management, it was necessary to combine some of the working group areas shown in Tables TMPM 4.8.2, TMPM 4.9, FMP-1 & FMP-2 from the various management plans.

In considering Table 1, one must be mindful that the area under management for the current term is for the amalgamated Bancroft Minden Forest while the area under management for past terms was derived from the smaller land base of the former Minden and L.M. Frost Centre MUs (1990-1996) and the Minden MU (1996-2001). Thus, to provide a more effective comparison with the current term, Table 1 BMF was also developed to show the effect of further combining the Minden and L.M. Frost Centre MUs with both the Bancroft and Whitney MUs for the 1990-1996 term, and combining the Minden MU with the Bancroft MU for the 1996-2001 term.

Examination of Table 1 reveals that barren & scattered (B&S) and not-satisfactorily-regenerated (NSR) lands account for only a small percentage of the production forest (e.g., 610 ha or 1.0% in 1990; 569 ha or 0.9% in 1996; and 2,065 ha or 0.8% in 2001). Although such low percentages of B&S / NSR lands potentially reflect well on the management of the forest, they are probably due less to active assessment

of regeneration and reclassification of surveyed areas and more to the loss of spatial relation of harvest depletion records to the current forest resource inventory (FRI) resulting from the recompilation of the Minden and L.M. Frost Centre inventories for the production of the 1996 Minden FMP and the development of an entirely new FRI for the production of the 2001 Bancroft Minden FMP.

Table 1 also shows a 3,103 ha (3%) increase in Crown Managed productive forest area from 105,420 ha in 1990 to 108,523 ha in 1996. While the total area of protection forest declined slightly over the same period (e.g., 42,253 ha vs. 42,058 ha), production forest area increased 3,298 ha (5%) from 63,167 ha to 66,465 ha. This increase appears to have been evenly distributed between all working groups except for Pr, By, Po & Mh which actually declined slightly from 1990 to 1996. Similarly, Crown Managed forested land increased 3,060 ha (2%) from 134,619 ha in 1990 to 137,679 ha in 1996. Although several factors may have contributed to this increase, the most important would have been the amalgamation and recompilation of the former Minden and L.M. Frost Centre forest resource inventories.

Moving into the current term, Table 1 BMF shows that with the further amalgamation of the Minden and Bancroft MUs, there was a 42,449 ha (14%) decrease in Crown Managed productive forest from 312,131 ha in 1996 to only 269,682 ha in 2001. The majority of this decrease (35,465 ha) occurred within the protection forest category while the remainder (6,984 ha) was production forest. In addition, there was a 19,599 ha (41%) decrease in non-productive forest from 48,290 ha to 28,691 ha during the same period. All told, this resulted in a 62,047 ha (17%) decrease in the total amount of Crown Managed forested land from 360,420 ha in 1996 to just 298,373 ha in 2001.

Although this decline appears alarming at first glance, comparison of Tables 4.8 from the 1996 Bancroft and Minden FMPs with Table FMP-1 from the 2001 Bancroft Minden FMP reveals offsetting increases in Crown Unmanaged forest area, thus alleviating concerns regarding the material loss of productive forest area. In fact, it appears that there was a 2,215 ha gain in total Crown productive forest area excluding Parks (312,131 ha vs. 314,346 ha) and a 2,917 ha gain in total Crown forested land (360,420 ha vs. 363,337 ha) when comparing these values at the beginning of the 1996-2001 term (Table 1) with those for combined Crown Managed and Unmanaged lands in Table FMP-1. However, this difference probably resulted from verification of ownership classes in preparation of the planning inventory for the 2001 FMP.

In contrast, the movement of Crown Managed forest into Crown Unmanaged forest resulted from the conclusion of Ontario's Living Legacy (OLL) process and expansion of the provincial parks system and other protected areas. Although most of these areas were yet to be regulated, they were nevertheless incorporated into the 2001 FMP and withdrawn from the Crown Managed forest in preparation for the 2001 FMP for the Bancroft Minden Forest. New or expanded Provincial Parks included the Dalton/Digby (now Queen Elizabeth II) Wildlands, Kawartha Highlands, Egan Chutes and Silent Lake Provincial Park Additions.

It is presumed that these protected areas would have contributed towards meeting several objectives in the 2001 FMP (e.g., wetlands, old growth, genetic, landscape and stand level forest diversity; tourism/recreation, and natural values dependant on forest cover) without adversely affecting those for timber production. Similarly, OLL Enhanced Management Areas (EMA) identified within the Bancroft Minden Forest would also have contributed to the achievement of forest diversity objectives as well as those for timber production since logging (with special conditions) is allowed within these areas.

Table 2 describes the forest units (FU) used in the various management plans for the three terms and lists the silvicultural systems employed in their management. It also shows the relationship between forest units and defined working groups from Table 1. Reference to related site types and detailed FRI parameters and classification criteria are also provided where such information was used to differentiate FUs. Additional comments are also provided to place FUs within the proper management context.

Since forest units were significantly modified with the production of each new TMP/FMP, it was necessary to list them separately for each term. For 1990-1996, it was also necessary to list them separately for the Minden and L.M. Frost Centre TMPs since differing management regimes for similar FUs prevented common groupings. For example, Hemlock was managed under the shelterwood system on the L.M.

Frost Centre MU but under the selection system on the Minden MU. In addition other FUs containing hard maple and tolerant hardwoods were too dissimilar to allow grouping.

Table 5 is intended to summarize the managed productive forest area by forest unit for each of the CTA terms. FMP-9 from the 2001-2006 FMP for the Bancroft Minden Forest has been modified to include age class totals for all forest units combined and is provided in place of Table 5 for the current term only. For the two previous terms, Tables 4.8.2 & 4.9 from the 1990-1995 TMP and 1996-2001 FMP provide little of the information required to complete Table 5. In addition, these tables summarize area by working group instead of forest unit. To accommodate these differences, Table 5 has been modified to summarize this information separately for both the 1990-1996 and 1996 to 2001 terms.

Table 5 for the Minden MU shows only 26% of the Crown Managed production forest in the younger age classes (0-20, 21-40 & 41-60 yrs) at the beginning of the 1990-1996 term with 67% within the older age classes (61-80, 81-100 & 101-120 yr) and the remaining 7% classified as all-aged for management under the selection system. This over-representation of older age classes becomes even more apparent at the beginning of the 1996-2001 term with the area of forest in the younger age classes decreased to just 12% while the older age classes increased to 78%. The area of all-aged forest also increased slightly to 10%. To facilitate comparison between terms, this information has been summarized in Table B following.

Table B – Percentage of Total Crown Managed Production Forest by Age Class Over Time for the Minden MU, L.M. Frost Centre MU and Bancroft Minden Forest

	Percentage of Total Crown Managed Production Forest (%) By Age Class											
Age Class	1990 Minden & L.M. Frost Centre Table 5	1996 Minden Table 5	2001 Bancroft Minden FMP-9 Available +Unavailable	2001 Bancroft Minden FMP-9 Available Only								
*0 to 20	6.3	4.0	3.8	4.0								
21 to 40	1.6	1.9	1.6	1.8								
41 to 60	18.5	6.1	5.6	4.6								
61 to 80	26.0	26.2	28.3	25.4								
81 to 100	15.0	23.0	18.7	17.8								
101 to 120	13.2	13.3	4.2	4.0								
121 +	12.4	15.4	1.2	1.1								
All-aged	7.0	10.1	36.6	41.3								
Total	100.0	100.0	100.0	100.0								
Area on which % is based (ha)	63,167	66,465	260,161	214,715								

<sup>\*</sup> includes B&S/NSR (all terms) and PFR (1990-1996 only)

Although it is not possible to draw direct comparisons between the current term for the amalgamated Bancroft Minden Forest and past terms for the Minden MU, information from FMP-9 for 2001-2006 has nevertheless been incorporated into Table B. The amalgamated forest does exhibit a similar lack of younger age classes (11%), however, the older age classes are less dominant (52%). In contrast, the amount of forest assigned to the all-aged category is dramatically greater (37%). This probably does not reflect any substantive difference in age-class structure resulting from the amalgamation of the former Minden and Bancroft MUs, but more likely reflects the re-assignment of the most productive hardwood stands from middle and older age classes to the all-aged category for the selection management in the

HD1 and HD2 forest units. As such, very few stands would likely exhibit true all-aged structure. Other forest units managed under the selection system include HE1 and LH1 (see Table 2).

Table B also shows that more than 45,000 ha of Crown Managed production forest area were deemed unavailable in the production of the 2001 FMP. This occurred through a process of "netting down" the land base of the Minden sub-unit to better reflect historical harvesting practices and the expertise of those possessing a thorough understanding of local site conditions. Efforts were made to concentrate forestry operations on better site types and thereby assign shallow, sensitive, low-productivity/quality sites with rough topography and poor access to the unavailable portion of the Crown managed production forest. In most cases, such areas were identified as Production Forest Reserve (PFR) in the new FRI.

Examination of Table FMP-9 shows that most of the netting down took place within the INT1 (12,003 ha), OR1 (9,605 ha), MW1 (4,052 ha), PW1 (3,101 ha), OC1 (3,072 ha) and HD2 (3,011 ha) FUs supporting the characterization in the FMP text that such areas were site class 3 tolerant hardwoods, mixedwoods and poplar/birch stands.

Also apparent in Table B, is that the effort to concentrate forestry operations on better sites resulted in increasing the relative percentage of area available for all-aged management from just under 37% to more than 41% while reducing relative percentages of available area particularly in the 61-80 and 81-100 yr age classes. This is consistent with strategies for landscape and stand level forest diversity contained in the 2001-2006 FMP. Also, increasing the amount of area under selection management is consistent with the timber production objective "to provide a continuous, economical and stable annual supply of suitable wood to the forest industry and to upgrade the quality of the forest products derived over time."

Finally, it is important to note that the Bancroft Minden Forest has been approved for the preparation of a new Forest Inventory in advance of planning for the 2011-2021 FMP. New inventory characteristics and planning layer updates will no doubt affect land base definitions and future trends in the amount of production forest under Crown management, by forest unit and by age class.

### Summary of Planned and Actual Harvest Volumes

Table 3 summarizes planned and actual harvest volumes for the current term and two preceding terms. Planned/actual levels of achievement have been annualized to facilitate comparison between terms of unequal duration and the current term for which complete reporting of operations is not yet available. Volumes are shown by species, with upland hardwood (UH) and lowland hardwood (LH) groupings to facilitate comparison of past terms with the current term.

Planned harvest volumes were derived using TMPM Tables 4.17 from the 1990-1995 TMP and the 1996-2001 FMP for the 1990-1996 and 1996-2001 terms respectively while Table FMP-21 from the 2001-2006 FMP was used to derive planned harvest volumes for current term. Tables RPFO-4 (1990-1995 and 1995-1996) were used to report actual harvest volumes for the 1990-1996 term while Tables RPFO-4 & 4a (1996-2001) was used to report volumes for the 1996-2001 term. Finally, tables AR-3 (2001-2002, 2002-2003 and 2003-2004) and AR-4 (2004-2005) were used to report current term harvest volumes.

Table 3 shows that planned average annual harvest volumes appear to be gradually declining over time. For example, average planned annual harvest volumes were 42,969.9 m3 for 1990-1996, decreasing to 30,417.8 m3 for 1996-2001. The large increase to 227,422.3 m3 for the current term reflects the amalgamation of the former Minden and Bancroft MUs into the Bancroft Minden Forest for 2001-2006. However, this still represents an overall decrease when compared against planned 1996-2001 term annual volumes for the Minden and Bancroft MUs combined (30,417.8 m3 + 200,135.8 m3 = 230,553.6 m3). The trend towards decreased planned volumes may be attributed to the following circumstances:

 a) "Netting down" processes to rationalize the MAD land base for the 1996 FMP and make the same portion of Crown Managed production forest unavailable for AHA calculation for the 2001 FMP;

- Increased length of cutting cycle for stands managed under the selection system from 20 years in previous terms to 30 years in the current term;
- Gradual increases in minimum basal area retention for areas harvested under both the shelterwood and selection systems;
- d) An increased proportion of area managed under the selection system;
- e) The establishment of additional parks and conservation reserves through the OLL process; and
- f) Gradual increases in the percentage of allocated area withdrawn for reserves through the Area of Concern planning process and the implementation of various Provincial guidelines.

All of these circumstances have had the effect of reducing planned volumes from one forest management plan to the next, in spite of a longer term trend towards higher forecast yields (see Table C following). Reductions in planned harvest volume from 1990 to 1996 appear to have been greatest in hard maple, poplar, upland hardwoods, hemlock and white birch, and to a lesser extent for lowland hardwoods and cedar while planned volumes for red pine, white pine and spruce actually increased. Reductions in planned harvest volumes from 1996 to 2001 were more modest and it is difficult to determine which species volumes might have actually increased or decreased on the amalgamated Bancroft Minden Forest in relation to the former and much smaller Minden MU.

In contrast, actual annual harvest volumes have increased substantially from 12,067 m3 for 1990-96 to 21,794 m3 for 1996-2001 and again to 150,898.6 m3 for 2001-2006 for the amalgamated land base of the Bancroft Minden Forest. Although there is not necessarily any correlation between trends in planned and actual volumes, Table 3 reveals that annual harvest volumes increased from 28% of planned for 1990-1996 to 72% of planned for 1996-2001 before falling back to 66% of planned to date for the current term. To facilitate comparison between terms, this information has been summarized in Table C within the text of this report.

Reasons for lower-than-planned harvest volumes are summarized in the two most recent RPFOs and are discussed in the following paragraphs. Under-achievement of forecast harvest volumes from 1990 to 1996 was attributed primarily to poor market conditions that prevailed from 1990 to 1992. Although markets did improve for most products by 1993, they remained weak for poplar pulpwood and hemlock sawlogs for the duration of the term. Lower than forecast yields in the tolerant hardwoods resulted from poor utilization of low grade material during the early part of the term, more conservative tree-marking to avoid aggravating hardwood decline symptoms, and unrealistically high yield forecasts in the TMP.

Market demand improved considerably from 1996 to 2001, as did the utilization of low quality products. High rates of recovery for pulp and expanding markets for hardwood chips, pallet grade hardwood and strong markets for fuelwood resulted in exceptional rates of utilization. It is also probable that efforts to rationalize the land base and focus operations on the more productive sites helped to increase volume recovery during this term, although significant rates of bypass were still reported. In spite of improved economic conditions, other circumstances acted to restrain annual harvest rates. For example, MNR downsizing early in the term resulted in a shortage of staff capacity to implement the tendered sale process while SFL establishment later in the term resulted in the imposition of new SFL operating fees that increased the overall cost of operations.

The first year of the 2001-2006 term experienced low levels of depletion and utilization despite generally favourable markets. A hot dry summer foliowed by mild winter conditions served to suppress the rate of harvest. In addition, a lack of SFL staffing capacity during FMP production and uncertainty over final FMP approval caused some licensees to arrange for alternative wood supplies from private land and the open market. Since then, harvesting rates have rebounded and final performance for the current term is likely to mirror that for 1996 to 2001.

<sup>&</sup>lt;sup>1</sup> The RPFO for the Minden Crown Management Unit April 1, 1996 to March 31, 2001 erroneously reported that 78% of the forecast area was depleted accounting for 110% of the expected volumes. This error occurred through the comparison of total harvest areas and volumes in Table RPFO-4 with planned harvest areas and volumes that did not include surplus associated with the THE and POP forest units. These surplus areas were correctly reported, however, in Table RPFO-1.

Average annual yields as calculated from Tables 3 & 4 have increased gradually over time from 28.3 m3/ha for 1990-1996, to 55 m3/ha for 1996-2001 and 59.7 m3/ha to date for 2001-2006. The reasons for this include improved markets and utilization as described above, particularly from 1996 to 2001. In addition, improved reporting of bypass areas has resulted in the same reported volumes being harvested from a smaller net area. Forecast yields were also derived from Tables 3 & 4 and verified against TMPM Tables 4.1.5 & 4.17 (1990-1996 & 1996-2001) and Tables FMP-18 & FMP-20 (2001-2006). To facilitate presentation and further comparison between terms, this information has also been summarized in Table C following.

Table C shows that forecast yields have fluctuated over time, from 48 m3/ha in 1990 to only 36.6 m3/ha in 1996 to 62 m3/ha in 2001. During the same period, the accuracy of yield forecasts fluctuated widely from overestimates of 19.7 m3/ha (41%) between forecast and actual yields for 1990-1996, to underestimates of 18.4 m3/ha (50%) for 1996-2001. This over-correction occurred because poor market conditions from 1990-1996 prompted managers to lower forecast yields for the 1996 FMP; however, market conditions improved dramatically thereafter and actual yields almost doubled. However, current overestimates of only 2.3 m3/ha (4%) to date for 2001-2006, reflect the improved precision of yield forecasts employed in the development of the 2001 FMP.

Table C – Actual Harvest Volume and Yield Relative to Forecast Harvest Volume, Yield and Actual Harvest Area Over Time for the Minden MU, L.M. Frost Centre MU and Bancroft Minden Forest

Term	Actual harvest area as a % of planned harvest area (%)	Actual harvest volume as a % of planned harvest volume (%)	Forecast Yield (m3/ha)	Actual Yield (m3/ha)
1990-1996	48	28	48.0	28.3
1996-2001	48	72	36.6	55.0
2001-2006	69	66	62.0	59.7

Table C also shows that total volume recovery as a percentage of planned harvest area has fluctuated over time. For example, only 28% of the forecast harvest volume was achieved from 48% of the harvest area from 1990 to1996 as a result of greatly overestimated yields. This situation flip-flopped entirely from 1996 to 2001 with 72% of forecast harvest volume achieved also from 48% of the harvest area<sup>2</sup>, reflecting yield underestimates that occurred for the reasons described in the preceding paragraph. Finally, 66% of the volume achieved to date was from 69% of the area for 2001-2006, reflecting the improved precision of yield forecasts used in the production of the 2001 FMP.

Beyond the current term, many of the same factors will continue to affect actual harvest volumes on the Bancroft Minden Forest. It is also reasonable to expect further reductions of planned harvest volumes in the future. Increasingly demanding annual planning and monitoring requirements associated with 2004 FMPM will increase the cost of operations, making it more difficult to implement timber production strategies on more marginal sites – effectively constraining the economically operable land base. In addition, implementation of the Natural Disturbance Pattern Emulation Guidelines for the 2006 FMP will also result in increased planning costs and further reductions in allowable harvest levels.

<sup>&</sup>lt;sup>2</sup> The RPFO for the Minden Crown Management Unit April 1, 1996 to March 31, 2001 erroneously reported that 78% of the forecast area was depleted accounting for 110% of the expected volumes. This error occurred through the comparison of total harvest areas and volumes in Table RPFO-4 with planned harvest areas and volumes that did not include surplus associated with the THE and POP forest units. These surplus areas were correctly reported, however, in Table RPFO-1.

### **Summary of Planned and Actual Harvest Area**

Table 4 summarizes planned and actual harvest areas for the current term and two preceding terms. Planned/actual levels of achievement have been annualized to facilitate comparison between terms of unequal duration and the current term for which complete reporting of operations is not yet available. Harvest areas are shown for each term by forest unit, corresponding to those described in Table 2.

Planned harvest areas were derived using TMPM Tables 4.15 from both the 1990-1995 TMP and the 1996-2001 FMP for the 1990-1996 and 1996-2001 terms respectively while Table FMP-18 from the 2001-2006 FMP was used to derive planned harvest areas for current term. Tables RPFO-1 (1990-1995 and 1995-1996) were used to report actual harvest areas for the 1990-1996 term while Table RPFO-1 (1996-2001) was used to report areas for the 1996-2001 term. Finally, tables AR-1 (2001-2002, 2002-2003, 2003-2004 and 2004-2005) were used to report harvest areas for the current term.

Planned harvest areas also decreased from term to term, with a planned annual harvest of 895 ha for 1990-1996, decreasing to 830 ha for 1996-2001. The large increase to 3,669 ha for the current term reflects the amalgamation of the former Minden and Bancroft MUs into the Bancroft Minden Forest for 2001-2006. However, this still represents a substantial decrease compared against planned 1996-2001 term areas for the Minden and Bancroft MUs combined (830 ha + 4,638 ha = 5,468 ha).

Over the same period, planned harvest volumes were also declining due to a number of factors including: a) net downs to the managed portion of the productive forest land base, b) Increased cutting cycle lengths for stands managed under the selection system, c) increasing minimum basal area retention for areas harvested under both the shelterwood and selection systems; d) increasing proportion of area managed under the selection system; e) expansion of parks and conservation reserves through the OLL process; and f) increasing percentages of allocated area withdrawn for reserves through the Area of Concern planning process and the implementation of various Provincial guidelines. These trends are discussed in more detail in the Summary of Planned and Actual Harvest Volumes and the RPFOs for previous terms. In addition, higher average yield forecasts in the current term (Table C) have served to accentuate the rate of planned harvest area decrease relative to decreases in planned harvest volumes (Table 3)

Actual annual harvest area decreased from 427 ha for 1990-1996 to 396 ha for 1996-2001. The large increase to 2,526 ha for the current term reflects the amalgamation of the former Minden and Bancroft MUs into the Bancroft Minden Forest for 2001-2006. However, this still represents an overall decrease when compared against actual 1996-2001 term annual areas for the Minden and Bancroft MUs combined (396 ha + 2,692 ha = 3,088 ha). In relative terms, these levels represent 48% of the planned harvest area for 1990-1996, 48% for 1996-2001 and 69% for 2001-2006 (Table C). Since harvest volume is a function of harvest area and yield, the reasons for harvest area underachievement are generally the same as those for underachievement in harvest volume. These are discussed thoroughly in the preceding *Summary of Planned and Actual Harvest Volumes*. Interestingly, actual harvest area as a percentage of planned harvest area remained constant at 48% for both the 1990-1996 and 1996-2001 terms despite actual volumes increasing from 28% of planned to 72% of planned over the same period.

### **Summary of Renewal and Maintenance**

Table 6 summarizes planned and actual renewal, tending and protection operations for the current term and two preceding terms. Planned/actual levels of achievement have been annualized to facilitate comparison between terms of unequal duration and the current term for which complete reporting of operations is not yet available. Areas are shown for each activity and are summarized for uneven-aged & even-aged management, natural & artificial regeneration, site preparation, tending and protection.

Planned renewal areas were derived using TMPM Tables 4.19 from both the 1990-1995 TMP and the 1996-2001 FMP for the 1990-1996 and 1996-2001 terms respectively while Table FMP-25 from the 2001-2006 FMP was used to derive planned renewal areas for current term. Tables RPFO-7 (1990-1995 and 1995-1996) were used to report actual renewal areas for the 1990-1996 term while RPFO-7 (1996-2001)

was used to report areas for the 1996-2001 term. Finally, Tables AR-6 (2001-2002, 2002-2003 and 2003-2004) and AR-7 (2004-2005) were used to report renewal areas for the current term.

Although some care must be taken in the direct comparison of silvicultural activity levels for the first two terms with those for the current term for the larger Bancroft Minden Forest, comparison of activity levels as a percentage of planned operations and in relation to actual harvest area remain valid indicators of silvicultural performance and commitment.

Table 6 shows that total planned regeneration was decreasing prior to the amalgamation of the Minden and Bancroft Forest in 2001. Planned regeneration decreased from 764.1 ha annually for 1990-1996, to just 270.4 ha for 1996-2001 before increasing to 3,066.8 ha for 2001-2006 on the larger Bancroft Minden Forest. Over the same period, actual regeneration levels also decreased from 298 ha annually for 1990-1996, to 252 ha for 1996-2001, before increasing to 2,206.3 ha annually to date for 2001-2006. Regeneration levels by activity were lower than planned except for uneven-aged management and even-aged natural regeneration in the 1996-2001 term, and CLAAG treatments in the 2001-2006 term. Total regeneration was 39% of planned for 1990-1996, 93% for 1996-2001 and 72% to date for 2001-2006.

Natural regeneration was the most significant component of the planned renewal program in all terms representing 92% of total regeneration for 1990-1996, only 71% for 1996-2001 and 91% for 2001-2006. Since the achievement of natural regeneration targets depends largely on the harvest of suitable forest units, one would expect total regeneration to appear most favourably in relation to actual harvest levels, which have also decreased over time (see *Summary of Planned and Actual Harvest Volumes*). In fact, this was only the case for two of the three terms with total regeneration equivalent to 70% of the actual harvest area for 1990-1996 and 92% to date for 2001-2006 (Tables 4 & 6). In contrast, total regeneration for 1996-2001 actually appeared less favourably in comparison to actual harvest area at only 63% of the actual harvest level. This anomaly was due to a substantial decrease in total planned regeneration from 764.1 ha annually for 1990-1996 to only 270.4 ha for 1996-2001 while actual regeneration levels for the same two terms (298 ha and 252 ha, respectively) remained fairly constant, reflecting obvious efforts to establish clearer linkages between plans and reality for the 1996-2001 term.

Although there is not a direct correlation between the area harvested and that renewed in any given term, successive terms of relative under-treatment potentially suggest that not all harvested areas are being accounted for in terms of natural or artificial regeneration. This may very well have been true for the first two terms (70% for 1990-1996 and 63% for 1996-2001); but is less of a concern in the current term with total regeneration amounting to 92% of the total harvest area to date. In fact, this percentage may even be higher than indicated due to the delayed reporting of uneven-aged management or even-aged natural regeneration early in the term with greater than average outstanding balances still to be reported in the final year (e.g., 2005-06).

Further examination of Table 6 also suggests a consistent level of commitment to artificial regeneration efforts through all three terms. Although tree planting as a percentage of planned levels decreased over time from 66% of planned for the 1990-1996 term, to only 44% for 1996-2001 and 42% for 2001-2006, tree planting levels remained fairly stable in absolute terms decreasing slightly from 41.3 ha annually for 1990-1996 to 35.2 ha for 1996-2001 before tripling to 99 ha after 2001, albeit on the much larger Bancroft Minden Forest. Lower-than-planned harvest levels and reduced government funding through the 1990's were the two primary reasons cited in past RPFOs for lower than planned levels of tree planting.

In the current term, however, there has been reduced reliance on artificial regeneration with a shift in investment focus away from conversion and plantation establishment, realizing that good markets have been established and will continue to exist for poplar. Rather, emphasis has shifted towards natural regeneration with supplemental stocking to ensure regeneration success in shelterwoods. An additional benefit of this strategy may be the possibility of earlier removal cuts.

The same trend is also evident for site preparation, with achievement levels of 39% of planned for 1990-1996, decreasing to only 19% for 1996-2001 and 20% for 2001-2006. In absolute terms, actual levels of site preparation decreased from 100.5 ha annually for 1990-1996 to 30.4 ha for 1996-2001 and 53.5 ha

after 2001 on the larger Bancroft Minden Forest. As with tree planting, lower-than-planned levels of site preparation resulted from lower depletion levels and constrained funding. Additionally, some sites originally planned for site preparation turned out to be inappropriate for that treatment because of the site conditions encountered. Even so, RPFO's for the 1990-1996 and 1996-2001 terms suggest that sufficient area was treated to accommodate tree planting programs.

The increasing inability to perform prescribed burning due to costs and crew availability impacted both the levels of forecast site preparation and tree planting, especially from 1996 to 2001. Also this term, an area originally slated for prescribed burn after clearcutting was harvested instead under the shelterwood system because of an existing understory pine component. In contrast, targets for prescribed burning have already been exceeded in the current term (2001-2006) with an unplanned prescribed burn after the FOP indicated this would be the only feasible renewal option.

Increasing levels of expenditure are perhaps most evident with respect to tending. Achievement levels were 44% of planned for 1990-1996 improving to 69% for 1996-2001 and 103% to date for 2001-2006. In absolute terms, average annual tending levels decreased from 484.7 ha for 1990-1996 to 219.6 ha for 1996-2001 before increasing nearly seven-fold to 1,494.5 ha annually after 2001.

The majority of the tending effort in all terms focused on improvement cutting (even and uneven-aged), which decreased from 425.5 ha annually for 1990-1996 to 213 ha for 1996-2001 before increasing to 1,147.3 ha to-date for 2001-2006. Despite increasing levels of expenditure for stand improvement from past terms to the current term, this treatment actually appears to be on a declining trend in relation to actual harvest area, with 425.5 ha of stand improvement work representing 100% of the annual harvest area for 1990-1996, 213 ha representing 54% of the harvest area for 1996-2001 and 1,147.3 ha representing just 45% of the harvest area for 2001-2006 (Tables 4 & 6). This is most likely due to the lack of fully adequate project funding and attempts to otherwise achieve stand structure objectives through normal operations and compliance monitoring.

The trend towards increased expenditure levels after 2001 is also evident with respect to cleaning. For example, planned annual levels of manual and ground chemical cleaning decreased from 188.4 ha for 1990-1996 to only 55 ha for1996-2001 before increasing to 294 ha to date for 2001-2006. Over the same period, relative achievement levels have decreased from 31% of planned for 1990-1996 to just 12% of planned for 1996-2001 before similarly increasing to 118% of planned to date for 2001-2006. In absolute terms, actual achievement levels have decreased from 59.2 ha annually for 1990-1996 to just 6.6 ha for 1996 before increasing to 347.3 ha annually to date for 2001-2006. Elevated achievement levels for the 2001-2006 term reflect improved stability of funding and increased efforts by management to follow-up on the progress of planted areas.

In summary, lower than planned natural regeneration levels from 1990 to 1996 were largely a function of lower than planned harvest levels. Although some artificial regeneration activities may have been constrained by the unavailability of suitable sites resulting from lower than planned harvest levels, the RPFO concluded that most of the essential work (regeneration of cutovers and tree marking) appears to have been completed during this term. The RPFO also cites inconsistent government funding as a reason for reductions in the overall silvicultural program, particularly in terms of stand improvement work.

Similarly, from 1996 to 2001, regeneration levels remained closely correlated to actual harvest levels but declined in relative terms despite improved transitional funding of operations through formation of the Special Purposes Account (which became the Forestry Futures Trust Fund in 2001). In addition, funding through the Forestry Futures Trust Fund facilitated the accomplishment of silvicultural targets, most notably tolerant hardwood stand improvement, white/red pine restoration/renewal work and various other site preparation and pruning projects.

Finally, stable levels of artificial regeneration and increased levels of cleaning and stand improvement after 2001 reflect both commitment to the sustainable management of the Bancroft Minden Forest and dedicated funding through the Forest Renewal Trust Fund. Continued utilization of the Forestry Futures Trust Fund has further served to accelerate the accomplishment of silvicultural targets. In this way,

effective and sufficiently funded renewal strategies have contributed to the achievement of forest diversity and timber production objectives contained within the 2001-2006 FMP for the Bancroft Minden Forest.

### **Summary of Regeneration Assessment**

Table 7 provides a summary of harvested area successfully regenerated for all forest units combined as a portion of total area harvested between 1990 and 1996. This time lag (9-15 yrs) between the original year of harvest (occurring from 1990 to 1996) and the latest potential date of regeneration assessment (2005) ensures that sufficient time has elapsed that all harvested areas could have potentially been assessed for their regeneration success. This period corresponds to the 1990-1996 CTA term referenced throughout this report, facilitating comparison of regeneration success with other identified trends.

The total area harvested from 1990 to 1996 was obtained from Tables RPFO-1 for 1990-1995 and 1995-1996. The extent of this area surveyed for regeneration success was determined by reviewing actual regeneration surveys performed by Bancroft Minden Forest Company Inc. from 1998 to present.

Table 7 shows that only 213 ha (22%) of the area harvested from 1990 to 1996 under even-aged management systems (clearcut and shelterwood) and none of the area harvested under uneven-aged management (selection) has been assessed for regeneration success. On the surface, this level of achievement appears inadequate. However, it is not surprising given the fiscal realities and standard practices during the period that the assessments were conducted. For example, TMP forecasts of regeneration assessment would normally include targets for areas harvested under the selection system, yet it was standard practice to assume that all areas harvested under this system were successfully regenerated and did not require a regeneration survey. The same assumption was used for forest units managed under even-aged systems (shelterwood and clearcut areas planned for natural regeneration).

Normally, the only areas to receive a regeneration assessment were conifer plantations, reflecting limited budgets and resources available to MNR. Comparison of the total area surveyed (213 ha) with the total area planted during the same term (248 ha from Table 6) would suggest that the majority of conifer plantations were being regularly assessed. Moreover, regeneration assessment targets have historically been based on planned harvest area rather than actual harvest area which historically has not exceeded 50% (Table C). Thus, comparison of actual survey levels with TMP/FMP forecast levels would exaggerate the true extent of any underachievement. This would also be the case for the current term since FMP-28 in the 2001-2006 FMP for the amalgamated Bancroft Minden Forest forecasts 17,056.1 ha of regeneration and post-harvest assessments in comparison to 18,346.8 ha of planned harvest area.

Table 7 also indicates that of the actual area surveyed, 213 ha (100%) were declared successfully regenerated. Survey effort was directed at white pine restoration work on mixedwood and pine mixedwood sites where significant expenditures had been made towards artificial regeneration including a prescribed burn. The above result demonstrates the success of restoration work to white pine and pine mixedwoods and the importance of monitoring silvicultural effectiveness in areas of significant silvicultural investment.

It was recognized in the *Minden Crown Management Unit Independent Forest Audit 1996-2001* that "Until 1998, MNR was responsible for survival assessments and FTG surveys but was unable to accomplish these due to a lack of resources. In 1998, the Company signed a Forest Management Services Agreement with MNR and the agreement included the responsibility of completing these surveys. FTG and survival assessment surveys were scheduled in the 1998-99 AWS but were deferred to the following year. A few survival assessments were conducted and no FTG assessments were done until 2000-01 at which time approximately 50% of the FTG surveys were completed." The Company did indicate that it intended to complete formal FTG assessments in the fall of 2001 however the audit team recommended that "MNR and the Company must ensure that Free-To-Grow surveys are completed as required." Since then the company has been actively performing assessments on the Bancroft Minden Forest. Thus, it is anticipated that Table 7 will reflect higher achievement levels for the 1996-2001 term in the next audit as many of the areas harvested during this term will have already been surveyed.

Recently, BMFC has developed survey and inventory update procedures that will ensure effective monitoring of regeneration success. These include rationale and procedures for performing pre-harvest, post-harvest, regeneration and free-to-grow surveys to measure the achievement of regeneration and management standards in accordance with the Silvicultural Effectiveness Monitoring Manual for Ontario (SEMMO). A review of past harvesting records and full reconciliation of Class X, Y & Z lands has also been undertaken to ensure that all candidate areas are identified for survey or FRI reclassification.

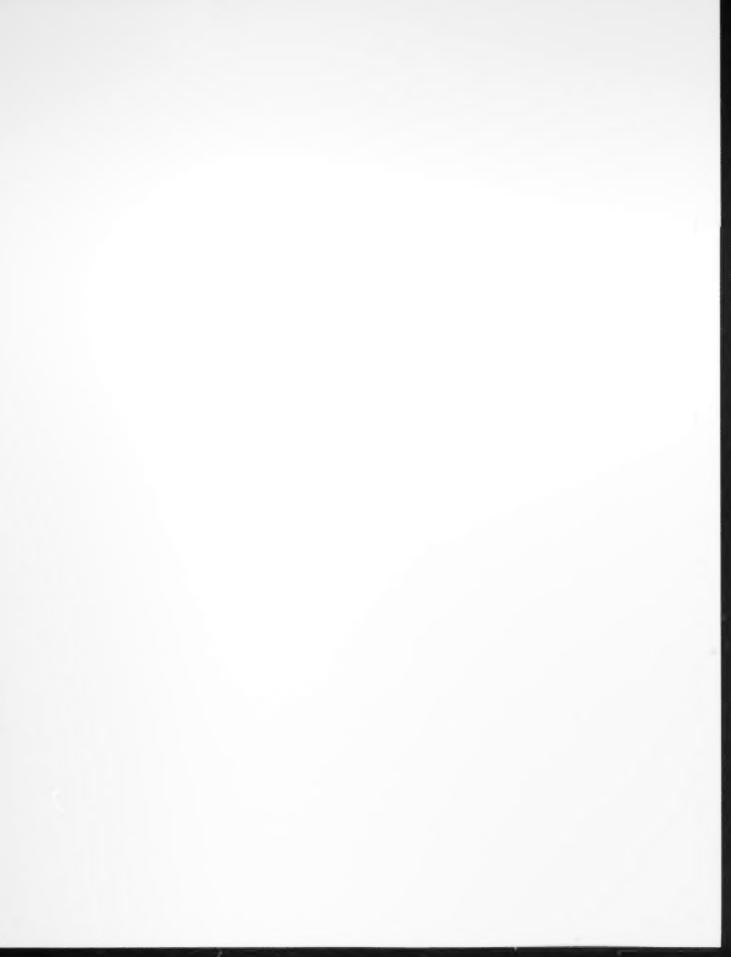


Table 1 - Summary of Total Area Under Management

### Past and Current Plans - Crown Managed

MU: Minden & L.M. Frost Centre (1990-1996), Minden (1996-2001) and Bancroft Minden (2001-2006)

					Area in hectares	
				Past Pl	ans	Current
Land Type		Plan Term		1990-1996	1996-2001	2001-2006
Non-Forested						
Other Land			- 1	602	602	3.657
Forested						
Non-productive			1	29,199	29,156	28,691
Productive				105,420	108,523	269,682
Protection			- 1	42,253	42,058	9.521
Production Forest						
	B&S/NSR		-	610	569	2,065
	Depleted			.	.	60
	Working Group	WGs included	- 1			
	Pw	Pw	1	6,525	7,997	23,390
	Pr	Pr	1	1,262	1,163	3,914
	Pj	Pj+Ps	1	3	3	383
	S	Sb+Sw	1	767	819	3.914
	B	В	1	1,556	1,694	6,674
	By	Ву	1	55	49	161
	C	Ce+L+Oc		2.080	2,204	8,099
	He	He		4.530	6,107	6,988
	Po	Po		10,829	10,323	60,938
	Bw	Bw	1	1,799	1,955	11,205
	Mh	Mh+Ma+Sl (selection)		26,947	25,780	100,613
	H	O+OH+H+Ms+A		6.204	7,802	31,759
Total Production Forest				63,167	66,465	260,161
Total Forested Land				134,619	137,679	298,373

TMP Tables 4.8.2 TMP Table 4.8.1 FMP-1.8.2 Minden, 4.8.1 Minden Bancroft Minden

L.M. Frost Centre

Bancroft Minden

<sup>\*</sup> The total B&S area shown in Table 4.8.2 of the 1990-1995 Minden TMP was reduced from 612 ha to 610 ha to account for a discrepancy between the amount of B&S area shown for the H WG in Table 4.8.2 (2 ha) and Table 4.9 (0 ha). The latter was assumed to be correct.

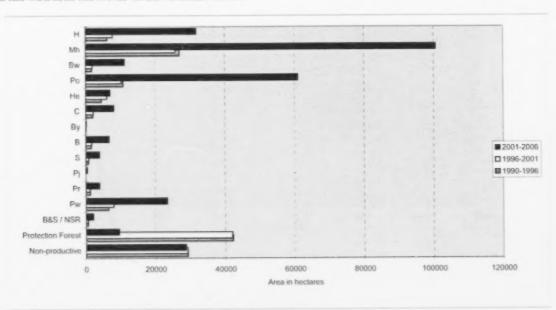


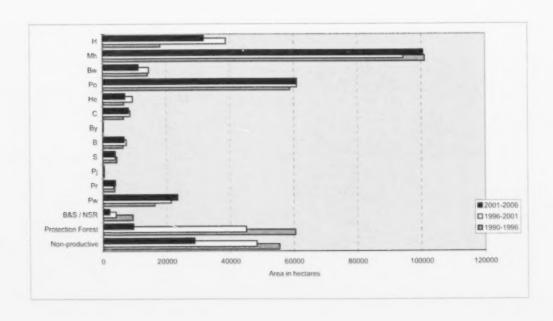
Table 1 - Summary of Total Area Under Management

Past and Current Plans - Crown Managed

MU: Bancroft, Whitney, Minden & Frost (1990-1996), Bancroft & Minden (1996-2001) and Bancroft Minden (2001-2006)

				Area in hectares	
			Past Pl	ans	Current
Land Type		Plan Term	1990-1996	1996-2001	2001-2006
Non-Forested				-	
Other Land			3,665	7,367	3,657
Forested					
Non-productive			55,449	48,290	28,691
Productive			306,298	312,131	269,682
Protection			60,484	44,986	9,521
Production Forest					
	B&S/NSR		9,349	4,082	2,065
	Depleted		-	-	60
	Working Group	WGs included			
	Pw	Pw	16,282	21,388	23,390
	Pr	Pr	3,707	3,374	3,914
	Pi	Pj+Ps	390	458	383
	s	Sb+Sw+Sr	4,386	3.918	3,914
	8	В	6,339	7,364	6.674
	By	By	55	199	161
	C	Ce+L	6,564	8,547	8,099
	He	He	6,667	9,350	6,988
	Po	Po	58,802	60,939	60,938
	Bw	Bw	14,089	14,465	11,205
	Mh	Mh+SI (selection)	101,108	94,412	100,613
	Н	O+OH+H+Ms+A+Be+Bd	18,076	38,650	31,759
Total Production Forest			245,814	267,145	260,161
Total Forested Land			361,747	360,420	298,373

TMP Tables 4.8.2 TMP Table 4.8.1 FMP-1 & 2 Bancroft, Whitney, Bancroft & Minden Bancroft Minden Minden & Frost



Forest Unit		Forest	Main	Site	Silvicultural	FRI Parameters	Additional
Code	Name	Type	Working Group	Type(s)	System	& Criteria	Information
encroft Min	den (2001-2006) Cedar Shelterwood	Conifer	Cedar	Ecosites 21, 22, 26, 29, 30, 32-	Shelterwood	Ce-Ab-Ew = 5 and Ce = Sh-La-Bf and	Stands dominated by Cedat
MI	Upland Conifer	Contlet	Sprice White	35 Ecosites 11, 13, 14, 16-22, 27,		Mh Ab Aw Bd Be Ch Ew Iw Qr Yb Ow Ob He 5 Pw Pr Pt Ps Sb Sw Ce La Oc He Br 5 and	Coniter mixedwood stands composed primarily of Sprace and
	Clearcut		Hard Maple	29, 30, 32-35 Ecosites, 14, 17, 22-30, 35	Selection	Pa - Bw = 0.4	Balsam Fit.  Quality tolerant hardwoods on site classes X, 1 or 2
DI	Hardword Selection	Toleram Hardwood	relate Maple	ECOSIOS. 14, 17, 22390, 32	Selection	and Po-Bw-BIs = 3 and (Sc = "X" or Sc = "1" or Sc = "2") and Age >= 80 and Stk >= 0.4. Some stands selected manually using FRI parameters.	
ID2	Hardwood Selection 2	Tolerant Hardwood	Hard Maple	Ecosites 14, 17, 23-30, 33, 35	Selection	Mh. Ab. Aw. Bd. Be. Ch. Ew. Iw. Qr. Yb. Ow. Oh. He 5 and Po. BwBt 3 and (Sc. = "X" or Sc. = "1" or Sc. = "2") and (Age. < 80 and Stk0.5 or Age 80 and Stk. <0.5). Some stands selected manually using FR1 parameters.	
11)4	Hardwood Shelterwood	Tolerant Hardwood	Hard Maple	Ecosites: 14, 17, 21-30, 32-35	Shelterwood	Mh-Ab-Aw-Bd-Be-Ch-Fw-Iw-Qr-Yb-Ow-Oh-He>= 5 Some stands selected manually using FRI parameters	Tolerant hardwoods generally on site class 3.
(E)	Hemlock Selection	Conster	Hemlock	Ecosites 14, 17, 23-25, 27, 28, 30	Selection	He 4	Stands having at least 40% Hemlock
NTI	Intolerant Clearcut	Intolerant Hardwood	Poplar	Fcosites: 11, 14, 16-18, 20-27, 30, 33-35	Clearcut	Po Bw >= 0.4	Stands composed predominantly of Trembling Aspen and Wh Birch mixed with small amounts of Red Maple
HI	Lowland Hardwood	Tolerant	Ash	F cosites 32, 34, 35	Selection	Ab-Ew 4 and Ab-Ew Ms Yb-Sb Ce La Bi	Stands composed of species that are associated with moist to
dW1	Selection Mixedwood Clearcut	Hardwood Mixed	Soft Maple	Ecosites: 14, 16-18, 21-30, 33	Clearcut	FU -'MW1'	wet sites. Will not be harvested.  Mixed stands composed of even aged species that will be
DC1	Lowland Conifer	Constet	Other Conster	35 Ecosites, 16, 22, 31-35	Clearcut	Ce-La-Sh-Ab-Ew-4 and Sb-La-Br—Ce	managed under the clearcut silvicultural system.  Low lying courier species on moist to wet sites. Will not be
	Clearcut		Maple All	Ecosites 13, 14, 17, 18, 21-30.	Shelterwood	Or -Pw and Or -Pr and Or -He and Or -Sw and Or -3	harvested Stands composed of Red Oak and Oak associated species
DRI	Red Oak Shelterwood	Tolerant Hardwood				W.G. "P)"	Stands composed of Jack Pine (generally plantation dominate
PJI	Jack Pine Clearcut	Comter	Jack Pine	Feosites 11, 13, 15, 19	Clearcut		Stand composed primarily of Red Pine (plantation dominated
PR2	Red Pine Clearcut	Conifer	Red Pine	Ecosites 11-14, 18, 20, 21, 27	Clearcut	Pt -Pw and Pt - Sw and Pt - Qt and Pt - Pj and Pt - Sh and (Pt - Pw - 3)	
PW 1	White Pine Shelterwood	Comfer	White Pine	Ecosites 11-14, 10-18, 20-22, 24-30, 35	Shelterwood	Pw — Pr and Pw — He and Pw — Sw and Pw — Pr and Pw — Qr and (Pw - Pr — 3) and (Pw - Pr He - Sw - Pr ) (Pr ) * Sk — Qr or Pw — Pr and Pw — He or Pw — Sw and Pw — Qr and Pw — Sh and Pw — Ce and Pw — Pr and (Pw - Pr — 3)	Stands where the main tree species is white pine where stocks is relatively uniform.
Minden (199	6-2001)						I to
IFM .	Hemlock	Coniter	He		Selection	He = 70%, Tum <sub>a</sub> = P <sub>W</sub> = P <sub>T</sub> = 50%,	40 year cutting cycle 120 year rotation age
PIN	Pine Mixed Wook Pine	Conifer	Pw. Po. Mb Pw		Clearcut	Pa - Pr 50%	150 year totation age with periodic thinnings, uniform; shelterwood option available
POP	Poplar Mixed Wood	Markoni	Po. Bw. Mh. B		Clearcut	P <sub>D</sub> => 30°°,	65 year rotation age
THE	Evenaged Tolerant	Tolerant	Mh		Cleateut	Mh, OH -> SC II	140 year rotation age
THU	Hardwood Unevenaged Tolerant	Tolerant	Mh		Selection	Mh => 50%	20 year cutting cycle
Minden (199	Hatdwood	Hardwood	1				
R (Con	Balsam Fit	Coniter	B		Not managed	W( = H	
Hu	White Birch	Hardwood	Bw		Not managed	WG - Bu WG - Ce I	
0	Cedar and Tamarack	Conster	Ce. L		Not managed Selection	WG - He	40 year cutting cycle
Mh H	Hand Maple SC 2 and	Coniter	Mh		Clearcut	WG - Mh SC 2. Oh	140 year rotation age
Mh3	Hard Maple SC 3	Tolerant	Mh		Not managed	WG - Mh SC - 3	
		Hardwood	-			WG = Po	65 year rolation age
Pw Pt	Poplar White and Red Pine	Hardwood Comiter	Pw. Pt		Cleatcut	WG - Pw. Pr	115 year rotation age, uniform shelterwood option available
\$	Black and White Spruc	e Conifer	Sb, Sw		Not managed	WG - Sh, Sw	
UN-Mh	Unevenaged Hard	1 olerant	Mh		Selection	WG = Mh SC ==2	Single tree selection with a 25 year cutting cycle
PFR	Maple Production Forest	Hardwood	All W.G.		Not managed	WG = All (Production Forest Reserve)	
	Reserve						
L.M. Frost (	Yellow Birch	Tolerant	By	T	Not managed	WG - Bv	140 year rotation age
	- CHILLIA CHICH	Hardwood					
He	Hemlock	Coniter	He		Shelterwood	WG - He	140 year rotation age 100 year rotation age
De	Other Confees	Toletant	A, Bs	-	Not managed Shelterwood	WG = B, Ce, I WG = A, By	120 year rotation age, 2 or 3 cut uniform shelterwood
Oh	Other Hardwoods	Hardwood		-	Not managed	WG - Or	120 year rotation age, 3 cut uniform shelterwood
I.H	Red Oak	Tolerant Hardwood	Or				
Po Hu	Poplar White Buch	Hardwood			Clearcut	WG - Po, Bw	80 year rotation age for SC = X.1, 60 year rotation age for S 2.3
Pu He	Pine	Coniter	Pu		Shelterwood	W.G Pw. He, Pt	140 year rotation age, 4 cut uniform shelterwood, selection option available where THw = 40%, clearcut option available where Po Hw = 40%, and 3 cut shelterwood option availa where Oh = 40%.
5	Spance	Coniter	Su		Not managed	WG - Su St	100 year rotation age, 2 cut uniform shelterwood
THw tunever	n) Tolerant Hardwoods (uneven aged)	Tolerant Hardwood	St. Ma, Mh		Selection	WG = THw = -40%.	Single tree selection with a 20 year cutting cycle, 2 cut unit shelterwood option available
THw (even)		Tolerant Hardwood	St. Ma, Mb		Not managed	WG - THw + 40",	120 year rotation age, clearcut option available where Po. B - 40%, 3 cut uniform shelterwood option available where - 40%, 4 cut uniform shelterwood option available where

Source FMPM FMP - 8 TMPM Tables 4.11, 4.13, 4.14 & 4.15

Table 3 - Summary of Planned & Actual Harvest Volumes

MU: Minden & L.M. Frost Centre (1990-1996), Minden (1996-2001) and Bancroft Minden (2001-2006)

### Average Planned Annual Harvest Volumes

Volumes are Annualized for the indicated perio

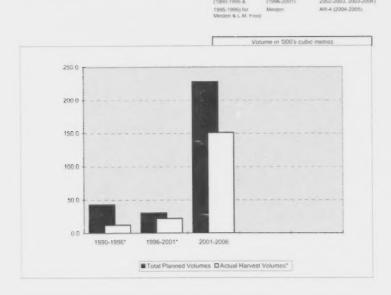
		Volum	ne in cubic metres	(m3)
		Past P	lans	Current
Specie	95	1990-1996	1996-2001	2001-2006
Pw	1996, 2001 Minden includes pine bolts	4052.9	4533.4	17234 4
Pr		363.5	2453.0	11654.6
Pj	P <sub>1</sub> P <sub>5</sub>	0.0	0.0	179.7
S	Sw Sh 1996-2001 Minden includes S & B pulp	767.0	833.6	5923.7
81		437.1	57.8	6468 4
Ce	Ce: Dc. 1990-1995 Minden includes cedar posts.	220.8	0.0	1130.2
	L.Ta	0.0	0.0	316.6
He		2302.5	705 8	6948.3
Po	1990-1995 & 1996-2001 Minden-include poplar pulp.	8954.2	6977.0	59195.5
Bw		674.7	167.4	18065.0
Mh	Includes hardwood fluetwood. Frost Centre includes Ma	20537.3	12895 0	61612.9
UH	Ma Ow Or Bo Be By Bt On hw Chb	3893.7	1298 0	30808.2
LH	Ms. Ab. An. En. Lh. Mr.	766.2	496.8	7884 7
Total F	Planned Volumes	42969 9	30417.8	227422 3
Source		(1990-1995) (	1996-2001)	FMP-21 (2001-2006) Bancroft Minden

<sup>\*</sup> Table 2-17 in 1990-1995 Mindon EMP incorrectly shows a total forecast volume of 143.762 m3, instead if should be 143.868 m3

Actual TREES Harvest Volumes

Malumas are Assurational for the indicated period

		Volum	e in cubic metres (r	n3)
		Past P	ans	Current
Specif	ne.	1990-1996	1996-2001	2001-2006
Pw		2289 5	5373.8	8994.4
Pr		884 0	3492.0	6767.2
Pj	Pt Ps	0.0	0.0	963.2
S	Se Sb	292 7	397.8	4254 0
Bf		36,0	6.0	1671.5
Ce		5.5	494 6	115.0
		0.0	0.0	0.1
He		564.7	171.6	1143.1
Po.		1029 8	2888.4	57007.3
Bw		87.5	148.4	8899.5
Ma	Mr. Ms. Mr. Ma (all maple)	4585.3	5495 2	49490 9
UH	Ow. Or Bo Be By Bt Oh Iw Chb H	2269.5	3297.0	10905 9
LH	Ab An En Lb	22 0	29.6	686 7
Total A	Actual Volumes	12066.5	21794.4	150898 8
Source				R-3 (2001-2002) 002-2003, 2003-20



### Table 4 - Summary of Planned & Actual Depletion Area Past and Current Plans

Minden & L.M. Frost Centre (1990-1996), Minden (1996-2001) and Bancroft Minden (2001-2006)

P	lanned Annua	Harvest Ar	ea			Actual Der	oletion Area		
		Area in hectares					hectares		
	Past F		Current		Past			Cur	rent
Plan Term	1990-1996	1996-2001	2001-2006	1000	1996		-2001		-2006
Forest Unit	1990-1990	1990-2001	20071-2000	Harvest	Natural	Harvest	Natural	Harvest	Natural
2001-2006				marvest	Matural	marvest	Matural	marvest	Natural
CE1			48					3	
CMI			141					12	5
HDI			879					923	56
			957					199	7
HD2			185						8
HD4			13					29	۰
HEI			573					781	-
ENT1									14
LHI	1		-					*	
MW1			217					108	1
OCT								-	
ORI			214					81	14
PJ1			14					17	
PR2			155					90	
PWI			273					132	33
1996-2001									
HEM		26				3	3		
MIX		37				22			
PIN		133				116	2		
POP	1	198				22			
THE		235				74			
THU		201				154			
1990-1996									
Minden									
В				-					
Bw	-			7.					
	-			4					
Не	46			16	1				
Mh.H	71			72					
Mh3	400			-	*				1
Po	186			22					1
Pw Pr	27			28	0				1
8	1			1	21				
UN-Mh	167			154	3				
P.F.R.									
Frost Centre	1			0					1
By	20			10	-				
Не	32			10	1.61				
Oc Ob	25			7	-				
	25								
Ot	21			6					
Po Bw				7					
Pw Hc	32			1					
THw (uneven)	289			94					
THW (even)	209			514	4				
Total Area		830	3,669	420	7	392	4	2,388	138
Source:	Tables 4.15 (1990-1995) Minden and Frost Centre RPFO-1 (1990-1995)	**RPFO-1 and Table 4 15 (1996-2001) Minden	FMP-18 (2001-2006)	RPFO's-1 (1990-1995 & 1995-1996) Minden and Frost Centre	RPFO's-1 (1990-1995 & 1995-1996) Minden and Frost Centre	RPFO-1 (1996-2001) Minden	RPFO-1 (1996-2001) Minden	AR-1 (2001-2002, 2002-2003, 2003-2004, 2004-2005)	AR-1 (2001-2002, 2002-2003, 2003-2004)

\* The forecast narvest areas cited in the 1990-1995 Frost Centre RPFO-1 were inconsistent with 1990-1995 Table 4.15
\*\* Forecast harvest areas include 128 ha of THE and 198 ha of POP (annualized) declared surplus in the 1996-2001 FMP

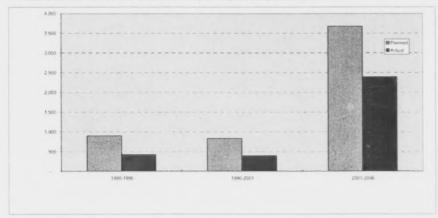


Table 5 - SUMMARY OF MANAGED PRODUCTIVE FOREST BY WORKING GROUP (TMPM 4.8.2 & 4.9)

MU: Minden & L.M. Frost Centre (1990-1996)

MU: Minden (1996-2001)

		Protectio	n Forest			duction For	rest				Protectio	n rorest	-		Production Forest Stage of Avai		thle	
Working	Age			Unava	nlable	Stage of	Avail	able	Working	Age			Unava		Stage of	-		
Group	Class	(ha)	(m)	(ha)	(m)	Mgmt.	(ha)	(m)	Group	Class	(ha)	(m')	(ha)	(m')	Mgmt.	(ha)	(m')	
W	PFR						43		Pw									
	BASNSR						196	- 1		B&S	- 1				1 1	399		
	1 to 20					1 1	320	1		1 to 20	1				i i	114		
						1 1	176	1	1	21 to 40	1				i i	438		
	21 to 40					1 1	1237	- 1		41 to 60	- 1				1 1	789		
	41 to 60						1054			61 to 80	- 1				1 1	1537		
	61 to 80							- 1		81 to 100	1				1 1	2776		
	81 to 100						1972	- 1	1						1 1	2343		
	101 to 120						882		1	101 to 120					1 1	2343		
	121 +					1 1	841			121+					1 1	0		
							0									0		
1	VG Subtotal	303	- 0	- ()	0	- 0	6721	- 0	Pr	AG Subtotal	330)	0	0	(1	- 0	8396		
							179		PT .	B&S						0		
	BASINSR						31			1 to 20					1 1	6		
	1 to 20								1	21 to 40					1 1	99		
	21 to 40						14								1 1	226		
	41 to 60						498	1		41 to 60					1 1	369		
	61 to 80						99	- 1	1	61 to 80								
	R1 to (00)						558			81 to 100					1 1	401		
	101 to 120						62	- 1		101 to 120					1 1	63		
	121 +						0	- 1	1	121 +					1 1	0		
							0									0		
1	VG Subtotal	29	0	0	0	- 0	1441	0	P <sub>3</sub>	WG Subtotal	29	()	- 0	- (	0	1163		
							0		-	B&S					1	0		
	B&S/NSR														1 1	0		
	1 to 20						- 2	1		1 to 20						2		
	21 to 40						.0			21 to 40								
	41 to 60			1	1		- 0	1		41 to 60						- 61		
	61 to 80				1		0	1		61 to 80				1	1 1	.0		
	81 to 100			i	i		0	1		81 to 100						.0		
							0			101 to 120						10		
	101 to 120						6			121 +						n		
	121 +					1	"			121						Ts.		
	WG Subtotal	0	-	- 0	-	0	1	0		WG Subtotal	()	- 0	()		0	3		
	PFR	- "	-	-	-		16		Sp									
							7			B&S				1				
w & Sb	BASASR						10			1 to 20						n		
	1 to 20														1	10		
	21 to 40					!	15			21 to 40		Į.	l .	1				
	41 to 60						149			41 to 60					1	41		
	61 to 80						224			61 to 80		1	1			247		
	81 to 100			1	1	1	130			81 to 100		1		1		252		
	101 to 120			1	1	1	141			101 to 120		1			1	108		
						1	82			121 +				1		161		
	121 +						-0									0		
	WG Subtotal	116				1	774	()		WG Subtotal	115	- 0	- 0		0 0	826		
	PFR						26		B	B&S				1		0		
	BASINSR				1		1									0		
	1 to 20						- 0			1 to 20						13		
	21 to 40						135			21 to 40				1	1			
	41 to 60						1051			41 to 60				1		860		
	61 to 80				1		219			61 to 80		1				577		
	81 to 100						113			81 to 100			1			157		
	101 to 120						12			101 to 120				1		73		
	121 +		i				0	l i		121 *			1			14		
							-0				79			-	0 0	1694		
	WG Subtotal PER	29		) (		1	1556	0	He	WG Subtotal	79		1	1	1	10.94	-	
le							100		1	1100						n		
	BASNSR					1	0			B&S						1	1	
	1 to 20				1		0			1 to 20			1			1	1	
	21 to 40						()			21 to 40						0		
	41 to 60		1	1			20			41 to 60						0	1	
	61 to 80	1					392			61 to 80				1		124		
						1	198			81 to 100				1		431		
	81 to 100						1672			101 to 120		1			1	1658		
	101 to 120	1	1												1	3894		
		1	I		1	1	2146	1		121 *			1			10.00	1	
	121 *	1																

#### Table 5 (Continued)

MU: Minden & L.M. Frost Centre (1990-1996)

Continued MU: Minden (1996-2001)

Continueo

		Protectio	n Forest	Pro	duction Fo	rest	9				Protectio	n Forest		Pro	duction Fo	Production Forest				
Working	Age	1		Unava		Stage of	Avai	lable	Working	Age			Unava		Stage of	Avail	lable			
Group	Class	(ha)	(m <sup>2</sup> )	(ha)	(m <sup>2</sup> )	Mgmt	(hn)	(m <sup>1</sup> )	Ciroup	Class	(hn)	(m)	(ha)	(m)	Mgmt.	(ha)	(m)			
De .							- 0		Ce											
Ce L&C	BAS/NSR						80			B&S						79				
	1 to 20						6)	1		1 to 20						8				
	21 to 40						6			21 to 40						0				
	41 to 60						142			41 to 60						6				
	61 to 80						457			61 to 80						346				
	81 to 100						755			81 to 100						967				
	101 to 120						386			101 to 120						479				
	121 *						334			121 =						406				
							.0									0				
1	VG Subtotal	102	- 0	- 0	()	- 0	2160	()		WG Subtotal	102	0	(1)	()	()	2283				
Mh	PER						141		Mh											
ven-aged	BASINSR						117		I ven-aged	B&S						52				
	1 to 20						1555			1 to 20						1042				
dinden.	21 to 40						538	1		21 to 40						658				
Mh	41 to 60						5598	1	1	41 to 60						1251				
rest	61 to 80						5283			61 to 80						6764				
St. Ma & Mh							2162	1	1	81 to 100						3183				
	101 to 120						3268	1		101 to 120						2091				
	121 -						3983			121 +						4085				
All aged	All						4419		All-aged							67(In				
	VG Subtotal	2161	0	0	- 0	0	27064	0		WG Subtotal	1804	- 0	- 0	(	-0	258				
Po	PFR	-					17	$\overline{}$	Pe											
	BASASR						28			B&S						27				
	1 to 20						1062		1	1 to 20						911				
	21 to 40						92	1 1		21 to 40						100				
	4) to 60						1876	1	1	41 to 60						359				
						1	4909	1		61 to 80						3758				
	61 to 80 81 to 100						1944	1 1		81 to 100						4280				
	101 to 120						887	1 1	1	101 to 120						535				
	121 +	1 1				1	42	1 1		121 +						420				
	121 *						9.			1						0				
,	A G Subtotal	25029	0	0	0	0	10857	()		W.G. Subtotal	24591	0	0	- (	- 0	10350				
Bw							0		1314											
	BASINSR						3	1 1	1	B&S						1				
	1 to 20				1		0	1 1	1	1 to 20						0				
	21 to 40				1		48	1 1		21 to 40						20				
	41 to 60					1	308	1 1	1	41 to 60				1	1	65				
	61 to 80						981	1 1	1	61 to 80				1		972				
	81 to 100				1		392	1 1	1	81 to 100				1	1	727				
	101 to 120				1	1	62	1 1		101 to 120					1	161				
	121 +				1		8	1 1		121 %					1	10				
							- 0									0				
	WG Subtotal	3653	- 0	()	(	1	1802	()		WG Subtotal	3627	0	- 0		1	195X				
OH							()		OH											
	*BAS NSR						0		HABS	B&S						2				
Minden	1 to 20						()	1		1 to 20						21				
H	21 to 40				1		13			21 to 40						- 0				
Frest:	41 to 60				1		820			41 to 60						451				
O.Bs. A:	61 to 80						2835			61 to 80						2720				
H. Ms	81 to 100						1270			K1 to 100						2092				
	101 to 120						951			101 to 120						1318				
	121 +				1	1	370			121						1249				
							- 0									U				
	WG Subtota	10368	(	(	) (	0	6259	()		W.G. Subtotal	10572	- 0			1	1853				
ALL	e-hl-B	- 0	- (	(	1	0	345	0	ALL.		0	0	0	1	1	0				
	B&S	0	0	0	1	1	610			B&5	6	0	1 0	1	1 (	569				
	1 to 20	()	(	(	1	0	2981			1 to 20	0	0	0		1	2116				
	21 to 40	0	0		1 (	0	1037	0		21 to 40	(1	0	0	1	1	1279	1			
	41 to 60	0			1	0	11699	0		41 to 60	(	0	(1		0	4048				
	61 to 80	0	0	1		0	16453	0		61 to 80	0	0	0	1	1	17414				
	81 to 100	0	1 (	1 (		0 0	9494			81 to 100	0	0	0	1	1	15266				
	101 to 120	0	0	1		0	N323	0		101 to 120	0	0	0	1	9	8828				
	121 +	0				0	7806	0		121 -	0	0	0		0 6	10239	1			
	All-aged	0				0 0	4419	0			0	0			0	6706				
											42058									

Source: TMPM Tables 4 8 2 & 4 9 (1990, 1995) Minden and L.M. Frost Centre'

Source: TMPM Tables 4.8.1 & 4.9 (1996-2001) Mindels

\* Table 4.8.2 in the 1990-1995 Minden TMP indicates that the H.W.G.F.U. contained 2 ha of BACN while Table 4.9 shows that it contained 0 ha. The latter is assumed to be correct.

\*\* Table 4.9 in the 1990-1995 L.M. Frost Centre TMP did not include 34.5 ha of PFR. This area had to be added to the Pw., S. B. He, Mh & Pw Wes for the total production forest area to much that shown in Table 4.8.2.

Management Unit: Bancroft Minden

Plan Term: April 1, 2001 to March 31, 2006

FMP-9 SUMMARY OF MANAGED CROWN PRODUCTIVE FOREST BY FOREST UNIT

		<b>Protection Forest</b>		Production Forest					
Forest	Age			Unava	ilable	Stage of	Ava	ilable	
Unit	Class	(ha)	(m <sup>3</sup> )	(ha)	(m <sup>3</sup> )	Manageme nt	(ha)	(m <sup>3</sup> )	
PW1	0-20			139		CT	2207.6	1103.5	
	21-40			18.2	918.2	CT	218.6	4797.5	
	41-60	1 1		445.9	51736.1		779.2	66331.5	
	61-80					FR	45.5	5971.5	
	61-80	579.7	30200.1	958.8	100695.7	PC	596.4	87612.4	
	61-80	1 1	- 1	17.3	2193.4	SC	166.8	24070.9	
	81-100	1 1		5.6	778.4		385.3	53806.7	
	81-100	336.1	21840.3	450.5	72080.7	PC	3392.8	571798.3	
	81-100		- 1	37.4	6657.2	SC	4159.9	608522.9	
	101-120	1 1				FR	446.2	49302.4	
	101-120	21.9	1652.7	952	178976.8	PC	2041.7	355442.3	
	101-120	1 1		42.8	7318.8	SC	1548.7	244002.3	
	121-140	1 1	- 1			FR	90.4	7685.3	
	121-140	1 1	- 1	34.2	8092.9		541.6	86063.4	
	121-140	1 1	- 1			SC	310.4	43858.5	
	141-160	1 1	- 1	- 1		FR	15.4	3146.2	
	141-160	1 1				PC	24.9	4050.6	
	141-160					SC	4.1	701.1	
Forest Unit		937.7	53693.1	3101.9	429448.2		20330	2218267.3	
PR2	0-20	2.8		1.1			909.6	740	
	21-40	10.3		95	6420.8		719	61400.3	
	41-60	66.69	3417.1	117.8	16716.8	1 1	758.5	119243.1	
	61-80	426.5	26656.3	93.3	9034.4	1 1	872.2	141784.9	
	81-100			81.9	16242.3	1 1	583.8	108794.4	
	101-120	-		20.4	2575		87.8	19093.7	
Forest Unit	Subtotal	506.5	30073.4	409.6	50989.3		3930.9	451056.4	
PJ1	21-40						127.3	10472.6	
	41-60	1 1	- 1	3.1	677.4	1 1	185.1	21007.1	
	61-80			52.3	7333.3		13.6	1847.8	
Forest Unit	Subtotal			55.4	8010.7		326	33327.5	
HE1	1-999	87.4	10440.2	968.3	147244.3		5079.7	797040.7	
Forest Unit	Subtotal	87.4	10440.2	968.3	147244.3		5079.7	797040.7	
OR1	0-20			323.7		CT	78.5		
	21-40			40.1	1002	CT			
	41-60			208.1	17574.9		77.2	5893.4	
	61-80	136.9	11560.2	3929.3	374944.6		3720.9	436782.8	
	81-100	362.9	26136.1	4773.8	474045.4		5084.7	727909.2	
	101-120			26.1	2539.5		96.8	9564.4	
	101-120	87.1	8787.2	186.5	19101.2	SC	771.7	120057.9	

Management Unit: Bancroft Minden Plan Term: April 1, 2001 to March 31, 2006

FMP-9 SUMMARY OF MANAGED CROWN PRODUCTIVE FOREST BY FOREST UNIT

	Age Class	Protection	-	Production Forest					
Forest Unit		ge Class		Unava	ilable	Stage of Manageme	Available		
		ha	m <sup>3</sup>	ha	m <sup>3</sup>	nt	ha	m <sup>3</sup>	
ORI									
(cont'd)	121-140	6.8	728.8	117.6	17895.9	SC	254.3	33242.8	
	141-160	20.2	2262.4			SC			
	161-180					SC			
Forest Unit		614	49474.7	9605.2	907103.5		10083.5	1333450.5	
LHI	1-999	60.7	5307.1	902	65435.1				
Forest Unit		60.7	5307.1	902	65435.1				
CEI	0-20			29.8		PC	49.6		
	21-40		- 1			PC	33.8	691.4	
	41-60		- 1	24.3	759.7		79.2	4209.4	
	61-80	9.9	840.1	411.5	34881.2		607.8	45299.8	
	81-100	33.8	2673.9	732.6	57910.8	PC	1842.1	190171.2	
	101-120	5.7	524.4	412.5	38082.3		554	51998.1	
	121-140			124.4	12605.7	PC	236.2	18450.7	
	141-160	8.5	909.5	71.4	5335.8		9.1	655.4	
	161-180			33.6	2165.5	PC			
Forest Unit	Subtotal .	57.8	4947.9	1840.1	151741		3411.8	311476	
OC1	0-20			76.3					
	21-40		- 1	26.8		1 1			
	41-60	2.9	273.1	111.3	10146.8				
	61-80			1081.4	104944.8				
	81-100	36.7	3607.4	1243.5	128422.5				
	101-120	8.3	838.3	446.9	61574.7	1 1			
	121-140		- 1	81.4	6738.6	1 1			
	141-160			4.9	194.9				
Forest Unit	Subtotal	47.9	4718.8	3072.4	312022.3				
HD1	1-999	53.9	8640.2	1843.4	320751.6		45570.3	6562108.8	
Forest Unit	Subtotal	53.9	8640.2	1843.4	320751.6		45570.3	6562108.8	
HD2	1-999	19.2	2649.6	3010.8	376635.2		36697.8	5614763.4	
Forest Unit	Subtotal	19.2	2649.6	3010.8	376635.2		36697.8	5614763.4	
HD4	0-20	4.5		7.8		PC	1000.6	53	
	21-40		- 1			PC	1766.4	767.5	
	41-60			46.3	1533.5	PC	308.1	25627.6	
	61-80	300.5	38863.5	1062.1	137578.2	PC	3290.1	350392.3	
	81-100	172.9	25185.9	621.1	90933.7		4618.3	628684.2	
	101-120	149.6	22739.2	65.6	9001.3		1031.3	131943.4	
	121-140			66.6	11976.8		59.9	7522	
	141-160			1.8		PC	53.5	4563.6	
	161-180					PC	81.4	7627.4	

Management Unit: Bancroft Minden Plan Term: April 1, 2001 to March 31, 2006

FMP-9 SUMMARY OF MANAGED CROWN PRODUCTIVE FOREST BY FOREST UNIT

		Protectio	n Forest		Production Forest					
Forest	Age Class			Unav	Unavailable		Available			
Unit		(ha)	(m <sup>3</sup> )	(ha)	(m <sup>3</sup> )	Manageme nt	(ha)	(m <sup>3</sup> )		
HD4										
(cont'd)	181-200					PC	1.6	201.8		
Forest Uni	t Subtotal	627.8	86788.6	1871.2	251389.5		12211.2	1157382.8		
CM1	0-20			76.1			514.8	2.8		
	21-40			6.5	128.2		44.4	1125.1		
	41-60			352.5	26482.3		1117.7	94621.4		
	61-80	31.4	3311.1	1130.1	119157.7		4952.5	563092.7		
	81-100	25.5	76793.2	850.4	109886.4		2023.7	284441.9		
	101-120	8.1	1085.4	121.1	16979.4		739.4	92386.8		
	121-140	4.3	619.3	92.5	13316	1 1	347.1	36031.3		
	141-160			37.7	2841.4					
	161-180			43.7	1398.8		4.9	561.1		
Forest Uni	t Subtotal	69.4	81809.1	2710.7	290190.2		9744.5	1072263.1		
INT1	0-20	15.5		678.2			3328.6	1602		
	21-40			17	903.4		844.8	26586.3		
	41-60	81.6	6561.8	2677.9	193133.1		5097.1	466009.7		
	61-80	4159.7	378420.4	7366.6	666732.3		33977.3	3771139.9		
	81-100	1994.1	251244.8	1157.9	132123.1		12307.3	1491919.8		
	101-120	127.5	17345.1	25.1	3401		836.3	92371.3		
	121-140			80.2	4806		206.6	28237.5		
Forest Uni	t Subtotal	6378.5	653572.1	12002.8	1001098.9		56597.9	5877866.5		
MW1	0-20			2.4	3.8		270.8			
	21-40			8.9	303.6		73.9	2907.3		
	41-60			802.1	68748.4		1308.9	119229.1		
	61-80	22.3	2245.9	2755.2	277801.4		5520.3	610982.4		
	81-100	38	4180.2	458.6	53534.4		3142.9	455356.4		
	101-120			15.2	2181.2		268.9	38765.2		
	121-140			9.7	1856.6		146.2	24632		
Forest Uni	t Subtotal	60.3	6426.1	4052	404425.6		10731.9	1251872.4		
	Total	9520.8	998540.9	45445.6	4244965.4		214715.2	26680873		

Table 6 - SUMMARY REPORT OF RENEWAL, TENDING AND PROTECTION OPERATIONS (RPFO-7)

MU: Minden & L.M. Frost Centre (1990-1996), Minden (1996-2001) and Bancroft Minden (2001-2006)

Г	Area Summary of all Forest Units (ha)						
Area is Annualized for the indicated period	1990-1996		1996-2	2001	2001-2	2006	
The to runniance ter the management of the second	Planned	Actual	Planned	Actual	Planned	*Actual	
newal							
generation							
Uneven-Aged Management							
Selection Cut - Harvest	570.0	256.7	166.6	169.X	1848,6	1142	
Total Uneven-Aged Management	570.0	256.7	166.6	169.8	1848.6	1142	
Even-Aged Management							
Natural Regeneration							
Clearcut	112.1			18.4	819.0	52	
CLAAG				- 1		32	
Strip Cut				- 1			
Seed Tree Cut							
Uniform Shelterwood Seed Cut	19.1		24.6	28.6	112.4	11	
Subtotal Natural	131.2	0.0	24.6	47.0	931.4	96	
Artificial Regeneration				i			
Planting	62.9	41.3	79.2	35.2	233.4	9	
Seeding direct							
with site preparation				1			
					53.4		
Scarification Subtotal Artificial	62.9	41.3	79.2	35.2	286.8	4	
Total Even-Aged Management	194.1	41.3	103.8	82.2	12182	TOR	
Total Regeneration	764.1	208.0	270.4	252.0	3066 N	2.20	
	/194.1	270.00	2.0.4				
te Preparation	127.0	50.0	54.0	30.4	136.0		
Mechanical			40.2	0.0	102.0		
Chemical	79.3 49.0	28.7	62.0	0.0	28.0	,	
Prescribed Burn	255.3	100.5	156.2	30.4	266.0		
Total Site Preparation	233.3	100.5	1.50.2	310.00	200.0		
ending							
Cleaning		31.5	55.0	6.6	190,0	11	
manual	122.0		55.0	0.0	104.0		
chemical - ground	66.4	27,7			1104.17		
+ aetial							
mechanical							
prescribed burn							
Spacing, pre-commercial thinning, improvement cutting							
even-aged	358.5			84.0	20.0		
uneven-aged	545.6	238.0	126.8	129.0	1136.4	10-	
Cultivation			1				
Pruning							
Total Tending	1092.4	484	318.8	219.6	1450.4	14	
rotection (Insect Pest Control)			manuscript on				
accelerated harvest							
salvage							
manual protection				7.4			
ground insecticide		78.					
aerial insecticida							
Total Protection		78.	-	7.4			
Source:	TMP 4.19	RPFO's-7	TMP 4.19	RPFO-7	FMP-25	AR-6 (2001-20)	
	(1990-1995)	(1990-1995) &	(1996-2001)	(1996-2001)	(2001-2006)	(2002-2003;	
	Minden and	(1995-1996)	Minden	Minden	Bancroft Minden	2003-2004)	
	L.M. Frost	Minden & Frost				AR-7 (2004-20	

<sup>• 2001-2006</sup> actual areas are annualized from 4 years of reporting for all operations. There are some minor differences between to-date values reported in AR-7 for 2004-2005 and cumulative current values report for 2001-2002, 2002-2003, 2003-2004 and 2004-2005. These differences are most likely due to the revised annual reporting format for 2004-05 (2004 FMPM), therefore the reported cumulative current values will be viewed as correct. Totals do NOT include 130 ha of planting retreatment, 210 ha of supplemental planting, 169 ha of supplemental mechanical SIP or 27 ha of supplemental chemical ground SIP reported during the period from 2001 to 2005.

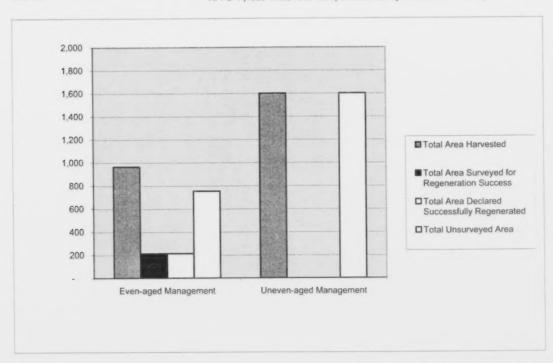
## Table 7 - Harvested Area Successfully Regenerated - Summary of All Forest Units

MU: Minden & L.M. Frost Centre (1990-1996)

	AREA IN HECTARES (All Other Forest Units Combined)	AREA IN HECTARES (Minden: UN-Mh, He; Frost Centre: THw)
	Even-aged Management	Uneven-aged Management
Total Area Harvested	965	1,600
Total Area Surveyed for Regeneration Success	213	-
Total Unsurveyed Area	753	1,600
Total Area Declared Successfully Regenerated	213	
Total Area Surveyed Not Successfully Regenerated	•	
NSR	-	-
B&S	-	-
Not Available for Regen. (eg. Roads & landings) Other		:
Percent of Area Surveyed Declared Successfully Regenerated	100.0%	

Source:

RPFO-1 (1990-1995; 1995-1996) & actual survey results from 1998 to present



### Appendix B: Audit Team Members and Qualifications

The IFAPP identified the following qualifications for Audit Teams:

### Lead Auditor:

- must have a minimum of 7 years recent and relevant experience in forest management and forest operations, in similar types of forests, preferably in Ontario;
- must be trained in auditing procedures and have current forest auditing experience;
   and
- · ideally is certified as an environmental auditor.

#### Audit Team:

- minimum of two people with experience in forest management planning and forest operations;
- a minimum of one wildlife biologist and/or ecologist;
- minimum of one person with experience in assessing: socioeconomic profiles and the social and economic impacts which may result from forest management planning decisions; public consultation processes in the context of forest management; and First Nations involvement in forest management planning;
- for each individual, minimum of 7 years recent and relevant experience in forest management and forest operations in similar forest types, preferably in Ontario;
- ideally, some Audit Team members will be certified as environmental auditors;
- at least one member of the Audit Team must have demonstrated experience and/or training in the requirements of the FMPM including the strategic direction and determination of sustainability component;
- at least one member of the Audit team shall be a Registered Professional Forester;
   and
- team size is a minimum of three.

The team for this audit, described in Table B - 1 below, included five people in the following positions: Lead Auditor and Harvesting and Modeling Forester, Wildlife and Roads Expert, Silviculturalist, Planning Auditor, and Consultation Auditor.

Table B - 1. The Roles, Responsibilities, and Qualifications of the Audit Team

Name/Company	Role	Responsibilities	Credentials  B.Sc.F., Ph.D. (Forest Economics); 18 years consulting experience in Ontario related to forest management, planning, wood supply modeling, and forest economics; participated in 14 previous auditing assignments; certified as an auditor by the Quality Management Institute.		
Dr. Jeremy Williams, RPF ArborVitae Environmental Services Ltd.	Lead Auditor, Harvesting and Modeling Forester	overall audit coordination;     oversee activities of other team members;     liaise with Company and MNR;     review and inspect forest harvesting records and practices;     review aspects of forest management related to forest economics and social impacts     reviews FMP modeling inputs and activities			
Mr. Tom Clark, CMC Consulting	Wildlife and Roads Expert	review and inspect Areas of Concern Documentation and Practices;     review and inspect aspects of forest management related to environmental practices and wildlife management integration;     review and inspect access and water crossings.	M.Sc. Participated in more than 12 audits as wildlife biologist. Lead auditor for Smartwood on audits and scopings in Canada and the US. Auditor trainer for Smartwood and directs activities related to the business of certification for Westwind SFL.		
Mr. John Long RPF, Private Consultant	Silviculturist	review and inspect silvicultural practices and related documentation;     review and inspects selected environmental aspects of forest management	B.Sc.F. Mr. Long has more than twenty-six years experience in forest management, much of it working in the Great Lakes- St. Lawrence Forest.		
Mr. Chris Wedeles ArborVitae Environmental Services Ltd.	Planning Auditor	review FMP and related documents to ensure compliance with FMPM and TMPM and other regulations	B.Sc., M.Sc. (Wildlife Biology); 20 years wildlife and forest ecology and experience in Ontario; completed 25 previous forest audits; certified as an auditor by the Quality Management Institute.		
Dr. Brent Tegler, North-South Environmental Inc	Consultation Auditor	review documentation related to forest management consultation processes     Consult with stakeholders, LCC, and First Nations regarding forest management issues	Dr. Tegler is an ecologist who is a principal with North-South Environmental Inc. Dr. Tegler has worked extensively in the forest sector of Ontario, as well as in Africa, Papua New Guinea, Solomon Islands, and the US.		

### **Appendix C: Independent Forest Audit Guiding Principles**

The IFAPP identifies several components of the audit process. The audit protocol constitutes the main framework for the audit. There are eight principles within the audit protocol (Table C - 1). Each principle contains a series of criteria which, if met, will result in the principle being achieved. For each criterion, a number of procedures are used to assess the auditees' compliance and effectiveness.

### Table C - 1. The Eight Principles Underlying the Audit Protocol, as noted in the IFAPP.

### 1. Commitment

Commitment is reflected in vision, mission and policy statements of the Company. Vision and mission statements are intended to provide long-term guidance for the organization. Policy statements reflect how the organization's vision and mission will be achieved. These statements must be reflected in the day-to-day operations of the organization.

### 2. Public Participation

The process of sustainable forest planning, implementation and monitoring is conducted in an open consultative fashion, with input from all members of the planning team, Local Citizens Committee, native groups and other parties with an interest in the operations of the forest unit.

### 3. Forest Management Planning

The forest management planning process involves the input of a number of individuals and groups to describe the current condition of the forest, the values and benefits to be obtained from the forest, the desired condition of the forest in the future, and the best methods to achieve that goal. Certain minimum standards and procedures have been established upon which all management units are evaluated.

### 4. Plan Implementation

Verification of the actual results of operations in the field compared to the planned operations is required to be able to assess achievement of the plan objectives and compliance with laws and regulations. In conjunction with the review of operations, the reporting tables are tested to ensure accurate results are reported.

### 5. System Support

System support concerns resources and activities needed to support plan implementation so as to achieve the desired objectives. Appropriate control, documentation and reporting procedures must be in place and operational. Planned action should occur at planned times, in planned places and to the planned degree.

#### 6. Monitoring

The activities and the effects of these activities in achieving management objectives must be regularly measured and assessed. In particular, the indicators of achievement must be assessed and their effectiveness reviewed.

### 7. Achievement of the Management Objectives and Forest Sustainability

Periodic assessments of the management of the forest unit operations and the forest unit must be made in order to determine whether forest sustainability and other management objectives are being achieved. This includes comparing the actual values of the predetermined indicators against the planned values and assessing the reasons for any significant deviations.

#### 8. Contractual Compliance

The licence must comply with the specific requirements of the SFL.

### Appendix D: List of Acronyms

AOC Area of Concern

ACOP Annual Compliance Operating Plan

AGS Acceptable Growing Stock
AHA Available Harvest Area

AR Annual Report

AWS Annual Work Schedule BMF Bancroft Minden Forest

BMFC Bancroft Minden Forest Company
B.Sc.F Bachelor of Science in Forestry
CFMP Contingency Forest Management Plan
Crown Forest Sustainability Act

Class EA Class Environmental Assessment for Timber Management on Crown

Lands in Ontario

COSEWIC Committee on the Status of Endangered Wildlife in Canada

EMA Enhanced Management Area
EMS Environmental Management System
FGRA Free-growing Regeneration Assessment

FIM Forest Information Manual Forest Management Plan

FMPM Forest Management Planning Manual

FOCIS Forest Operations Compliance Inspection System

FOIR Forest Operations Inspection Report

FRI Forest Resource Inventory
FRT Forest Renewal Trust

FTG Free-to-Grow Forest unit

GIS Geographic Information System
GIO Global Positioning System

ha Hectares km Kilometres

IFA Independent Forest Audit

IFAPP Independent Forest Audit Process and Protocol

ISO International Standards Organization

LCC Local Citizens Committee

m<sup>3</sup> cubic meters

MNR Ontario Ministry of Natural Resources

MOE Ministry of the Environment

NDPEG Natural Disturbance Pattern Emulation Guide
NRVIS Natural Resource Values Information System

OLL Ontario's Living Legacy

PT Planning Team

RPF Registered Professional Forester
RPFO Report of Past Forest Operations
RSA Resource Stewardship Agreement

SEMMO Silvicultural Effectiveness Monitoring Manual for Ontario

SGR Silvicultural Ground Rules
SFL Sustainable Forest Licence
SFM Sustainable Forest Management

SFMM	Strategic Forest Management Model
SOP	Standard Operating Procedure

		2				
STARS	Silvicultural	Treatment	Assessment :	and	Reporting	System

STP	Silvicultural	Treatment	Package

### Appendix E: Summary of Input to the Audit Process

### General Public/ Other Stakeholders:

The Audit Team received ten written submissions, two of which came by e-mail, in response to requests for comments sent out to mailing list members and advertised in local newspapers. Seven of the comments were generally favourable, one was not happy with the results of operations, and one was mainly concerned with a private land issue which was outside the scope of the audit. One of the most frequent comments was that more of the larger trees should be cut because they often decline in quality during the interval to the next harvest. RSA correspondence was reviewed, including e-mails and meeting minutes, but no tourism operators were contacted directly.

### Local Citizens Committee:

Eight members of the LCC were interviewed, and there was considerable interaction and involvement throughout the audit between the LCC and Audit Team. Eight LCC members participated in the truck portion of the forest inspection, and roughly six came to the presentation of preliminary results. The LCC is quite polarized and so there were dissenting opinions regarding some key issues, as reflected throughout the report, but many members expressed frustration with the polarized situation and felt that it represented a lack of progression of thought. It was felt by some that this situation may be contributing to the difficulties in attracting new members and having higher attendance. There was agreement that the MNR was doing a good job of coordinating the LCC, and there was good access to Company and MNR staff.

### Native Communities:

All First Nations were contacted by the Audit Team by mail, fax and by phone (minimum of three calls leaving messages on separate occasions). The Audit Team received direct feedback from the Kawartha Nishnawbe and Alderville First Nation. These respondents were concerned with the provision of traditional harvest resources and protection for archeological resources.

### Overlapping Licensees, Contractors and Commitment Holders:

Overlapping licensees and contractors expressed a strong approval for the efforts and commitment of the Company, as well as MNR. They felt that the Company was doing very well in a difficult industry situation, that the quality of operations was improving due to training and compliance inspections. There were no wood supply commitments on this forest.

### SFL Holder:

The SFL holder staff discussed many aspects of forest management, their relationships with stakeholders, and the MNR. The Company emphasized that it could not direct the

shareholders but could only make recommendations, for example, of when to harvest a particular allocation. Many of the impressions of the Company reported by the auditors in section 3.1 (Commitment) were derived from discussions with Company staff regarding its general approach to business. Company staff also pointed out that the Company had only been in full operation for about 6 or 7 years at the time of the audit, and there has been a steep learning curve on the part of staff, shareholders, and MNR.

### Ministry of Natural Resources:

District MNR staff provided a great deal of input regarding most facets of the audit. MNR staff accompanied the auditors on the field inspections, were available for phone and in-person interviews, and exchanges of e-mail. While some key staff had only been in their position for a relatively short time (e.g. District Manager was acting), MNR staff generally shared the Company's orientation towards forest management, compliance standards, and management of the non-timber aspects of the forest.

